THE JOURNAL OF PERIODONTOLOGY is lovingly dedicated to the memory of Doctor Gillette Hayden. Her selfless devotion and untiring efforts in behalf of periodontia and the American Academy of Periodontology, have served as an inspiration to her close associates which can only be consummated by carrying onward the work for which she spent her life.

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THE *JOURNAL OF PERIODONTOLOGY* is published to serve as the professional journal of periodontia; to keep dentists in touch with research being carried on in this field and related sciences; to stimulate greater interest in the supporting tissues of the teeth and their relation to oral and general health. The plan to continue the publication of abstracts indefinitely will make the Journal a fund of extensive information, readily available to students, teachers, researchers, and clinicians.

The Journal is the official organ of the American Academy of Periodontology and will contain therefore those papers of scientific and clinical interest which are presented at the annual meetings of that society. The proceedings of the 1939 annual meeting will be published in the January, 1940 issue. This number contains the abstracts of important articles on periodontia that appeared during the year of 1938 in addition to several papers of historical value read before the Academy.

We are grateful to all who have made available the subject matter from which the abstracts and copies of abstracts have been made, including the authors of the original articles, the journals mentioned in the text of the abstract section, and those who have aided in any way in compiling the material presented in this issue.

THE JOURNAL OF PERIODONTOLOGY

JULY, NINETEEN HUNDRED THIRTY-NINE

[A SYMPOSIUM]

The Historical Background of Periodontology*

(Continued from the January Issue)

THE EVOLUTION OF THE SCALER AND ITS INFLUENCE ON THE DEVELOPMENT OF PERIODONTIA

By JOHN OPPIE MCCALL, D. D. S., F. A. A. P., F. A. C. D.
New York City

ALMOST FROM the time that calculus was discovered to be a foreign substance deposited on the tooth surface, its obvious relationship to disease of the gingivae has been recognized. By the same token it is clear that its removal was recognized as an adjunct in the treatment of disorders of these tissues. It seems probable that the scaler, or some progenitor of the scaler was one of the earliest instruments designed for use in dental treatment.

We are accustomed to take it for granted that most worthwhile theories about teeth are of recent date. I think it is profitable, therefore, to turn back the pages of history for a few minutes that we may see how careful were the observations of some early workers in this field. Fauchard, who is called the father of modern dentistry, in his famous book, *The Dental Surgeon,* devotes Chapter IX to a discussion of calculus and its harmful effects. He states:

Tartar, or tufa (which some authors and the common people term canker), is a substance which accumulates upon the surface of the teeth. By remaining there it turns into what resembles a stony crust, attaining fairly large proportions. The commonest cause of loss of the teeth is negligence on the part of those persons who do not have their teeth cleaned when they can, and when they notice the continued presence of this foreign substance, which produces diseases in the gums and sometimes even caries. Tartar is the reason why the gum suffers destruction, and sometimes occasions dental caries as a result.

* Read at the Twenty-fifth Annual Meeting of the American Academy of Periodontology at St. Louis, Missouri, October 20, 1938.

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A better understanding of the nature of dental tartar requires consideration of the causes which produce it, and of the mechanism of its gradual and almost imperceptible formation. I find that there are three principal causes.

The first cause proceeds from the particles of food lodged in the spaces between the teeth and the gums, or between two approximating teeth. These particles, rendered sodden by the saliva, become like a clammy slime, which soon dries out during the instants when the mouth is less irrigated by saliva or is not irrigated by it at all, for then the air which we breathe evaporates the most fluid parts of the food.

The second cause lies in the air, which, being expelled from the mouth by respiration and laden with exhalations, has the following effect. Any viscous, unctuous, and heavy elements in these exhalations cling to the teeth touched by the air, and are superposed upon the first layer of tartar existing in the rudimentary form of the dried slime to which I just referred.

The third cause contributes no less than do the two preceding causes to the formation of tartar. This cause is the saliva. When it is vitiated as the result of some pathologic state of the lymph, and when it chances to be rich in salts and to have a high mineral content, the saliva deposits them upon the crowns of the teeth. Unless we put forward this last cause, I do not see how we could account for the crusts which sometimes cover the entire tooth, not even excepting the roots, as I have sometimes observed. What has strengthened my belief here is the resemblance which I have noticed between this material that had encrusted the whole tooth and the foreign bodies found more than once at the root of the tongue, as we read in the *Journal des Scavans* for the year 1721. This material was like stone, just as were those foreign bodies, which can have been formed solely by lymph which was vitiated and similar to the altered saliva.

Once the first layer of tartar has formed, fresh layers superposed upon one another are added to it daily. The mechanism is about the same as that of a stone in the urinary bladder, and of all sorts of stones, which grow through the addition of layers.

The movements of the tongue destroy the greatest part of the tartar which adheres to the inner surface of the incisors of the upper jaw. Most of the other teeth are coated with it, on the contrary, particularly the lower teeth, since the tartar by its very weight always gravitates thither, and since the tongue cannot get rid of it likewise. Unless people hasten to have the tartar removed, it creeps between the gums and the teeth, and by staying there it swells and dilates the gums. This explains why, later on, when the gums have shrunk, the teeth become loose and come away at the slightest touch.

It is easy to ridicule these statements, but when we appreciate the lack of facilities for scientific investigation which hampered men like Fauchard, we cannot but admire their penetrating observation of the phenomena of the mouth and teeth.

Along with his statements regarding the nature of calculus and the harm it does, Fauchard also describes the instruments to be used in its removal (Fig. 1) and speaks

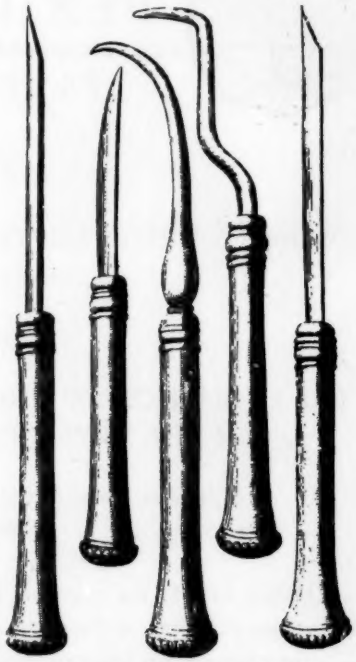

Fig. 1. Instruments (scalers) for detaching tartar used by Fauchard. Reproduced from Guerini's *History of Dentistry.*

of the importance of cleaning the teeth without injuring the enamel. He also illustrates instruments to be used for the removal of tartar.

As indicated before, Fauchard was not the first writer to mention calculus and the means for its removal. Abucalsis in the eleventh century noted the occurrence of calculus on the tooth surface and its influence on the gums. He advocated "scraping" this incrustation until it was completely removed, and devised a set of instruments (Fig. 2) for this purpose. He seems to have had a clear conception of the problems of scaling presented through the anatomy and relationships of the teeth.

Fabricius, five hundred years later presents the interesting thought that in the removal of dental tartar for people of high degree the scaler should be made of silver.

Earlier writers mention calculus, but not in such detail as those I have mentioned.

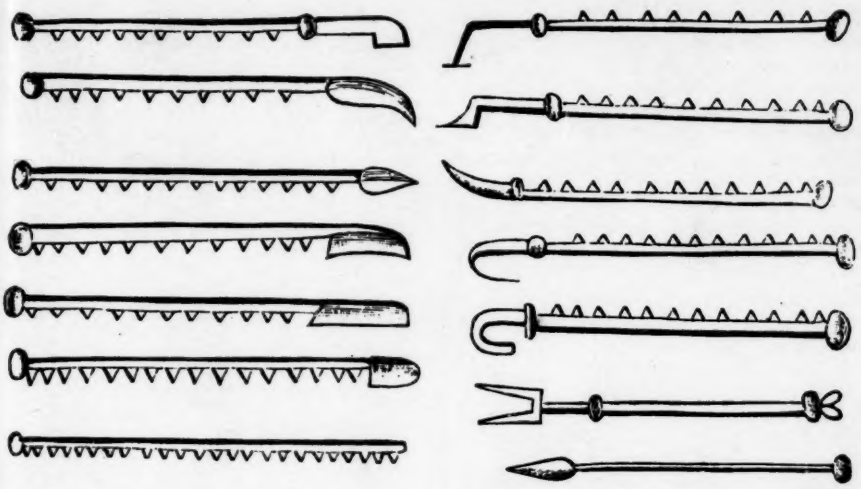

Fig. 2. Set of fourteen dental "scrapers" used by Abucalsis. Reproduced from Guerini's *History of Dentistry.*

Incidentally, if I may digress for a moment, it is interesting to note that filing of the teeth that had become loose was advocated by Galen in the second century. He says: When one has one or more teeth, in consequence of trauma, or from any other cause, become loose and project above the line of the others, the part is to be removed with a small file.

So much for the background of the subject of periodontia. Two things stand out. First is the fact that calculus was recognized long ago as a cause of gingival irritation and that its removal was considered a necessary part of the treatment of gingival disease. The other is that in the times of which I speak there seems to have been no thought given to any local cause for periodontal disease other than calculus. The latter situation, in fact, persisted until well into the modern period of dentistry. The result of all this was a focussing of interest on the scaling of the teeth which has persisted, and quite properly, to the present day. I say that this interest has been quite proper, for it remains as true today as in the day of Fauchard or Abucalsis that scaling of the teeth of greater or less extent is needed in the treatment of all cases of periodontal disease. But it is also true that in practically all such cases, something besides the removal of calculus is needed to make the treatment complete. There has been a very unfortunate failure to understand that fact on the part of many in the profession, even among our educators. And so I hope that any who listen to this paper or who read it, will understand that I am attempting to present here just one phase of the complicated subject of periodontia.

As was to be expected, the early dentists developed very crude instruments for the removal of calculus. There was no philosophy as to the most efficient method of instrumentation and usually little regard for the possible harm that the scaling instrument might do to either tooth surface or gum. And there was, in consequence, no systematizing of design. It seems obvious that a pointed instrument either straight or curved into a hook, predominates in early design. The straight pointed instrument has passed out of the picture; since it must necessarily have been used with a push motion, with probable painful and injurious sequelae, we can understand its disappearance. The hook-shaped instrument has, somewhere through the years, acquired cutting edges leading out to the point and now is known as a sickle scaler. A modification is the hooked instrument with a rounded end instead of a point, but with the cutting edges of the sickle. This is now known as a curet.

Through the many years which elapsed between the time of Abucalsis and that of Riggs in our own era there seems to have

been little appreciation of the need for refinement in scaler design, also little realization that success in the treatment of periodontal disease depended on refinement of scaling technic. There was, in other words, very general acceptance of the relationship between calculus removal and treatment of the disease, but lack of realization of the fact that failure in treatment might have been due largely to inadequate removal of this calculus.

Through this anomaly and also through the obvious fact that not all the phenomena of the occurrence of periodontal disease were explainable on the basis of calculus formation, there developed a very appreciable confusion as to how far calculus formation really entered into the development of the disease. Proceeding more or less directly from this confusion there arose the argument, which at one time gave promise of being never-ending, as to whether periodontal disease was a local condition purely or whether it was a local manifestation of a systemic disorder. I trace largely to the evolution of the scaler and of a precise technic for its use, the resolution of this argument and the foundation for the clarification of periodontal etiology.

I have stated that until the time of Riggs there was no appreciable progress made in scaler design or use. This, of course, is not strictly true. Unquestionably Riggs could not have developed the instruments which bear his name or have accomplished what he did with them if there had been no progress during all the centuries from Abucalsis on. It nevertheless remained for him to put into practice the principles of scaling in essentially the way we accept them today. Also he must be given credit for having the determination to follow to a successful conclusion his convictions as to the results to be expected from careful scaling. To be sure his instruments were crude as compared to those of a later day. Their lack of a contra-angle was a handicap only to be overcome by an exceptionally skillful operator.

It is evident, judging by the literature of the day, that few operators were able to duplicate the results demonstrated by Riggs. Nevertheless he was credited by the profession with achieving success in treatment. And unquestionably he turned the thoughts of his contemporaries and of later workers in this field to the subject of instrumentation as a basic factor in periodontal treatment. His instruments were chiefly of the

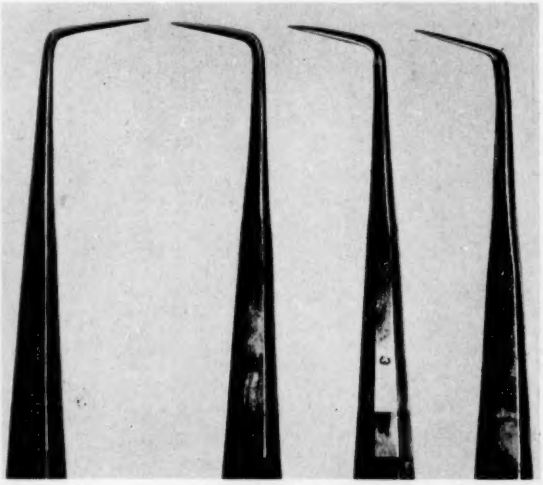

Fig. 3. Part of the set of scalers used by Riggs. Others in the set were of the same general design. Some had the cutting edge on the side toward the operator, others away from the operator. They were essentially sickles, but were used much as the later curets were used. Note entire lack of contra-angle.

sickle type (Fig. 3) and this basic type evidently received the greatest attention for the period immediately following.

Much greater refinement was needed, however, and this was provided by William J. Younger. He produced a highly refined set of instruments of the curet type based partly on Riggs' designs and was unquestionably his successor both in instrument design and in ability to produce successful results in treatment. Later Robert M. Good modified the Younger instruments and we know them now chiefly as the Younger-Good scalers (Fig. 4). These instruments were designed with delicate blades and slender shanks and were produced in such a variety of shapes as would permit gaining

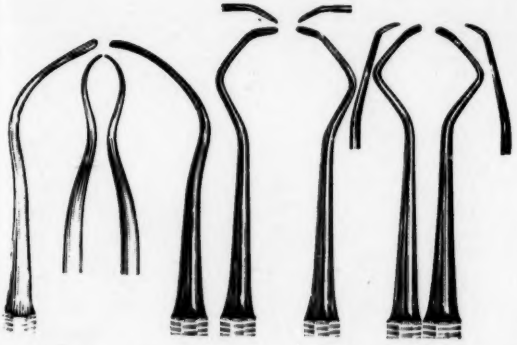

Fig. 4. Part of the set of curet scalers designed by Younger and modified by Good. There is a varying amount of contra-angle, but it is not as carefully developed as the illustrations indicate.

access to all parts of the mouth. Their fatal weakness, especially prominent in those intended for use in posterior locations, was a lack of contra-angle. This meant that the working point was far from the line of the handle, a fact which rendered manipulation of the instrument extremely difficult and precluded success except in the most skillful hands. Sarrazin attempted to overcome this handicap by changing the handle design, particularly placing knobs on the handles by means of which a more secure grasp of the instrument was attained. This still left something to be desired.

So far we find little evidence of any development of the hoe scaler. Here and there sporadic experiments into this field were made, as by A. W. Harlan and Frank Abbott. These men, however, made a relatively slight impression in this field, probably due to the fact that they did not carry their ideas far enough in the matter of providing a variety of shapes to reach all surfaces of the teeth in different parts of the mouth. Their designs, however, obviously represented a real contribution and served to stimulate others along this line. Abbott improved the hoe considerably, providing an offset in the shank which gave improved visibility of the field of operation; this offset gave much of the effect of the contra-angle, which was to be definitely included in scaler design at a later date.

Notable among the designers of hoe instruments was Henry H. Tompkins. He presented several patterns (Fig. 5) not previously known and also developed a larger number of patterns. He did not at first, however, introduce the contra-angle; consequently his instruments were for the most part difficult to control, as was the case with the curets of the day.

At about the same time that Tompkins introduced his scalers, D. D. Smith brought out a set of files (Fig. 6). Files seem not to have been used extensively before this time for the removal of calculus. The novelty of this type of instrument together with the impression created by D. D. Smith's claims

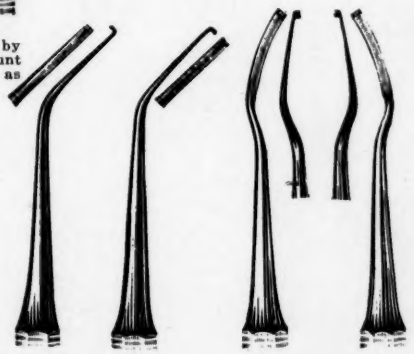

Fig. 5. Part of the set of Tompkins scalers. These were early examples of the hoe type of scaler, and embody some of the ideas found in the Harlan and Abbott hoes. Note lack of contra-angle.

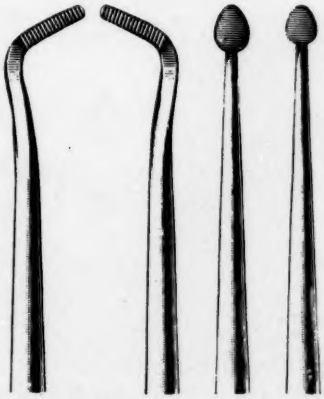

Fig. 6. Part of the set of files designed by D. D. Smith.

for the oral prophylactic treatment, focused attention on these instruments and brought into use thereby an instrument form which has persisted to the present day. These files were for the most part heavy and while some had a contra-angle it was usually inadequate. They represented a distinct advance, however, insofar as they made it possible for many dentists of average ability to perform quite satisfactory scaling operations.

Fig. 7. Part of the set of curet scalers designed by Hutchinson. They present a refinement and modification of the Younger and Younger-Good scalers. There is very little attempt to introduce the contra-angle.

Working along the line followed by Riggs, Younger and Good, R. G. Hutchinson designed some very interesting and delicate curets (Fig. 7), also a set of files (Figs. 8 and 9) more delicate than those in use before that time. His instruments, both scalers and files, were not contra-angled and consequently were difficult to manipulate with satisfaction. Like D. D. Smith, Hutchinson attracted much attention in the profession, not merely by his new designs in instruments, but also by his insistence that periodontal disease was controllable through local treatment. At a time when the profession at large was in a state of confusion due to the continuation of the debate between the local and systemic theory adherents, it was most helpful to have the forthright statements of these men as a rallying point for a realistic development of periodontal science. Their educational activities occurred largely in the earlier part of the first decade of this century.

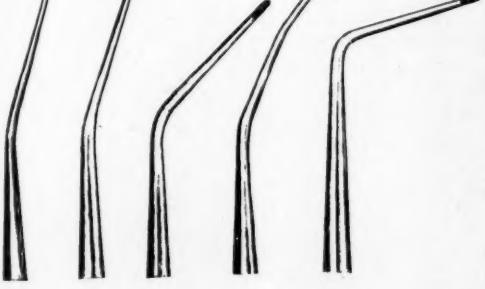

Fig. 8. Part of the set of files designed by Hutchinson. Contra-angle is lacking, but there is greater delicacy and variety of design than in the Smith files.

Fig. 9. A Hutchinson file showing the face of this file.

It is worthy of note that interest in the work of D. D. Smith, R. G. Hutchinson, and Henry H. Tompkins centered very largely in the instruments they devised and used. As each one came before the profession with his ideas the thing which impressed dentists most and which was chiefly followed up by those who were interested, was the instrument used. Dentists would attend a meeting, hear a paper and see a clinic given by one of these men or some follower and immediately order a set of the instruments used by the essayist. That success did not always follow the utilization of new instruments did not seem to dampen interest and faith in this means of treatment. As a matter of fact, the conception became firmly implanted in the minds of

the dentists of that day and still remains in the minds of many today, as stated before, that instrumentation for the removal of calculus was the sum total of treatment for periodontal disease.

We now come to the time of C. M. Carr who, largely through the medium of some entirely new principles in instrument design, concentrated the thought of the profession to a still greater degree on this phase of treatment. Carr not only struck a new note in instrument design but by means of the wide range of applicability of his instruments, made possible the standardizing of technic and also put the acquisition of an effective technic within the reach of a large percentage of dentists instead of only the few who might possess exceptional skill. Carr's forceful personality and an ability unquestioned, although having its limitations, had much to do with the promotion of his ideas. The profession, and humanity at large, owes much to him, even though as time has gone on, the number of users of his instruments has probably not increased, and though we have advanced beyond his conception of treatment.

Of the features of Carr's instruments, mention should be made of the following: exact contra-angle, even in instruments of the greatest curvature for reaching posterior teeth (this provides for the maximum control and ease of manipulation); two-point contact, on the root surface, of instrument blade and shank (this is an application of the principle of the Japanese plane); rotation of blade on the axis of the shank to permit convenient application to all surfaces around the circumference of the tooth; shank design in straight, concave, and convex shapes for adaptation to root surfaces of different contours; refinement of the design of the hoe with most favorable angulation of blade to shank, and constancy of such angulation through the development of a true flat surface for the proximal surface or the face of the blade. Carr received valuable suggestions as to development of his set from Thomas B. Hartzell and Austin F. James.

Carr made another important contribution in this field, namely, an improved technic for tempering scalers. Scalers tempered by his method were extremely hard, hence would hold a cutting edge well, yet would not break with ordinarily careful usage.

The Carr set consisted of eighteen groups of eight hoes each (Fig. 10), divided into

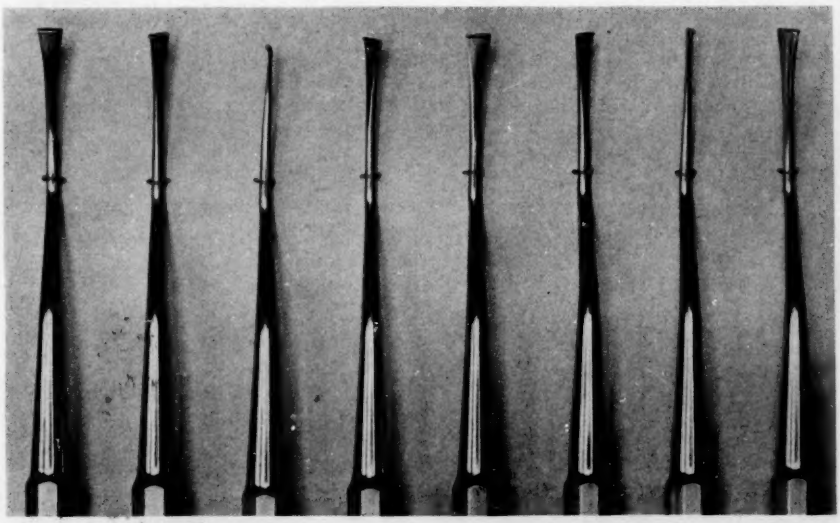

Fig. 10. A "family" of Carr scalers showing the rotation of position of the blade in successive members to permit application of the instruments completely around a tooth. The instruments in this illustration were from the broad blade set; most Carr sets had narrower blades. The utmost refinement of hoe construction is found in these instruments. (Photo by courtesy of F. S. McKay.)

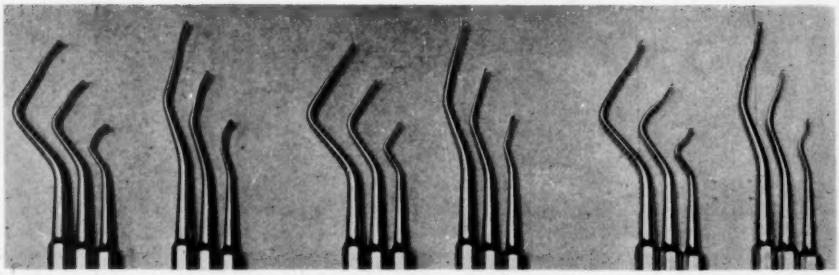

Fig. 11. Carr scalers illustrating the shape and size of the eighteen "families" constituting the set. There is a set of eight instruments as shown in Fig. 10 for each instrument type shown in this illustration. Groups 1 and 2 have concave shanks; groups 3 and 4 have straight shanks; groups 5 and 6 have convex shanks.
Groups 1, 3 and 5 have a greater angulation of the "elbow," being thus adaptable for posterior teeth. Groups 2, 4 and 6 have a lesser angulation of the "elbow" and are used chiefly on anterior teeth. In each group there are long, medium and short "families" for use in pockets of varying depth.
Note that every instrument has a perfect contra-angle. (Photo by courtesy of F. S. McKay.)

three classes according to the length of the shank; each class then being subdivided into two groups of instruments having lesser and greater curvature of the shank (Fig. 11). In each of these two classes the instruments were subdivided as to whether the shank was straight, concave or convex. Theoretically, and also practically, this provided instruments which would reach any part of the mouth and reach any tooth surface in any part of the mouth. An exception to this is the bifurcation of molar roots, this being difficult with a hoe scaler.

The entire Carr set numbered 150 instruments (Fig. 12), a set of six sickles rounding out that arbitrary number. It aroused great interest on the part of the profession although derided by some because of the large number of instruments comprising it. It was approved and adopted, however, by many practitioners. Those who adopted his system soon found that they were achieving a success in treatment far beyond anything of which they had previously dreamed. This accomplished two things. First, it placed instrumentation on a solid basis permitting the attainment of the ultimate in treatment in so far as this could conceivably be achieved through instrumentation alone. By clearing up one phase of periodontal treatment, it then permitted the concentration of the thought of the profession on other phases through a process of elimination. This system may thus in one sense be said to be the foundation of modern periodontic practice. This statement is made with full realization that much remained to be learned that Carr himself had not visualized.

One of the features of the Carr system of instrumentation was the method he devised for securing a uniform bevel of the cutting edge of the hoe scalers during sharpening.

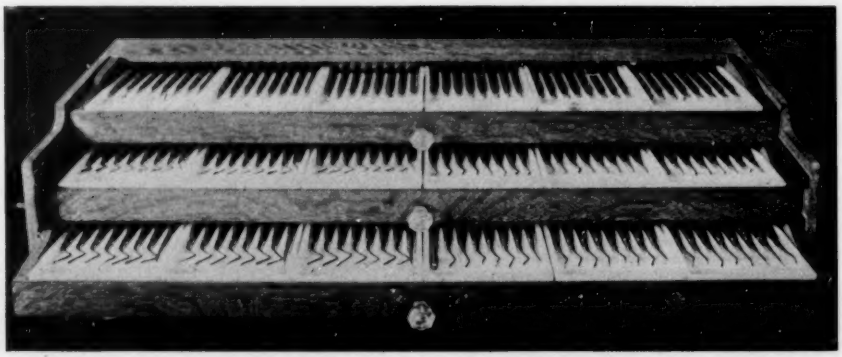

Fig. 12. Complete set of 18 "families" of Carr scalers (144 instruments) in cabinet. (Photo by courtesy of F. S. McKay.)

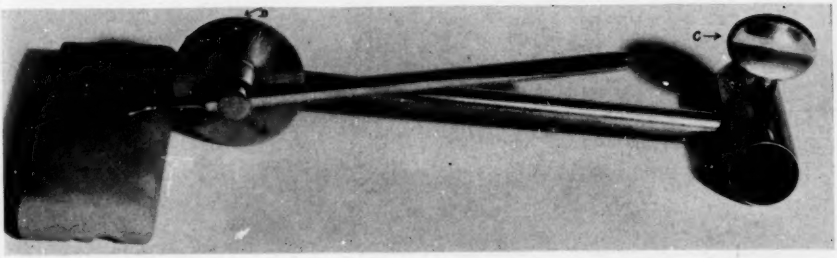

Fig. 13. Carr instrument holder for the sharpening of hoe scalers. The scaler is held in a clamp secured by a thumb nut, the clamp being capable of rotation. The amount of rotation is indicated by the pointer as it moves on the scale. Fifteen degrees or 4 gradations on the scale is the recommended angulation for sharpening. The thumb nut in the base can be loosened to permit a lateral rotation as described in the text. A, instrument clamp. B, pointer which moves with the instrument when rotated. C, thumb nut in base.

This is accomplished by clamping the instrument in a holder (Fig. 13) on which adjustments can be made to bring the scaler in the desired relationship to the sharpening stone. The desired angulation is obtained by first adjusting the scaler to lie with its shank parallel to the stone. For convenience in making the initial adjustment a small spring clip is slipped onto the scaler shank

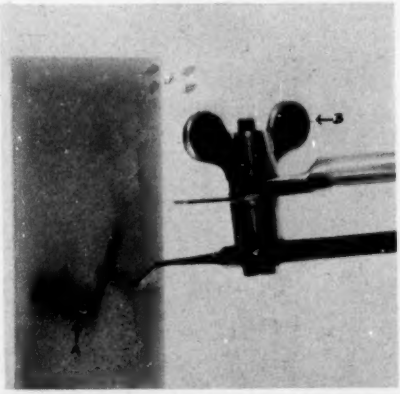

Fig. 14. Another view of the head of the Carr instrument holder. This shows the spring clip on the shank of the scaler which facilitates the initial paralleling of shank to stone, and thus provides the starting point for the calculation of the angle for sharpening. A, spring clip temporarily placed on instrument shank. B, thumb nut which secures instrument in clamp.

just back of the blade (Fig. 14) when this clip lies flat on the stone the shank is in the initial position. (After the initial positioning this clip is removed.) Then the angle of the shank to the stone is changed a predetermined number of degrees by rotating the clamp, using a calibrated scale as a guide, and securing the instrument in the desired position by tightening the thumb nut of the clamp.

A second adjustment is needed for such scalers as are shown in the illustration, since the initial change in angle will tilt the blade laterally and result in only one corner of the blade touching the stone. To bring the entire width of the blade on to the stone, the thumb nut at the base of the holder is loosened and the holder head with instrument is rotated to the desired position. This thumb nut is tightened and the instrument can then be sharpened simply by moving it back and forth on the stone. It is, of course, essential that the table or bench on which the stone and the holder rest, shall be flat so that there will be no tipping of the stone or rocking of the base of the holder during sharpening.

Excellent as the Carr holder is, it has shortcomings. First, is the change in angulation of the scaler shank to the stone when the second adjustment is made. With some instruments this produces a perceptible variation from the desired angulation and will produce a corresponding change in the bevel of the blade. Second, instruments sharpened in this manner have an absolutely straight cutting edge with sharp corners at each end. In practice these corners are rounded over so that they will not make scratches in the root surface. Even with this modification the scaler can not be effectively used in slight concavities such as are found on certain root surfaces.

In an effort to overcome these objectionable features the author designed an instrument holder (Fig. 15) with which accurate adjustments of angulation can be made and with which, in addition, the blade can be given a slight convexity, all with mainte-

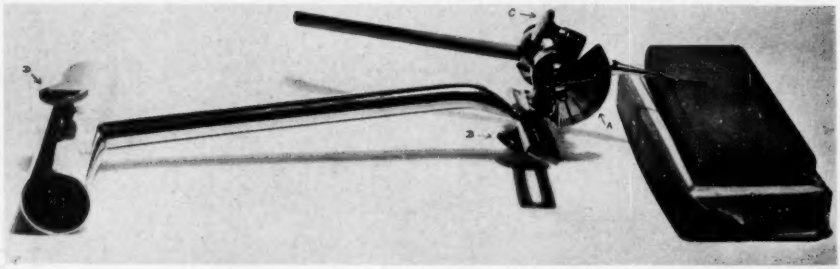

Fig. 15. Author's instrument holder showing the pointer and scale used for calculating the angulation of the scaler to the stone for sharpening. A, pointer and scale by which angulation of the scaler is measured (the pointer moves with the scaler). B, thumb nut which locks head assembly in transverse slide. C, thumb nut which locks the rotating instrument clamp in desired position. D, thumb nut in base.

nance of the desired blade bevel. In operation the initial adjustment is made with the shank of the instrument parallel to the stone, using a clip as in the Carr method. The instrument is, however, placed in such relation that the shank is in line with the shaft of the holder (Fig. 16) as well as having the above adjustment. This is made possible by the swiveling action permitted by the split ball holder, and lateral adjustment of the head of the holder in the transverse slide. (Note that in the Carr holder the instrument handle is always parallel to the shaft and that the relation of the shank of the instrument to the line of the holder shaft varies according to the contra-angle of the shank.) After the initial adjustment is made, the thumb nut controlling the rotation axis is slightly loosened and the instrument is given the desired angulation, using the calibrated scale; the thumb nut is then tightened. Next the thumb nut at the base is loosened, permitting rotation of the shaft of the holder (carrying the holder head and the clamped instrument). As the instrument is moved back and forth over the stone the holder head is rocked slightly. This produces any desired amount of convexity of the blade or of its corners without alteration of the bevel at any point.

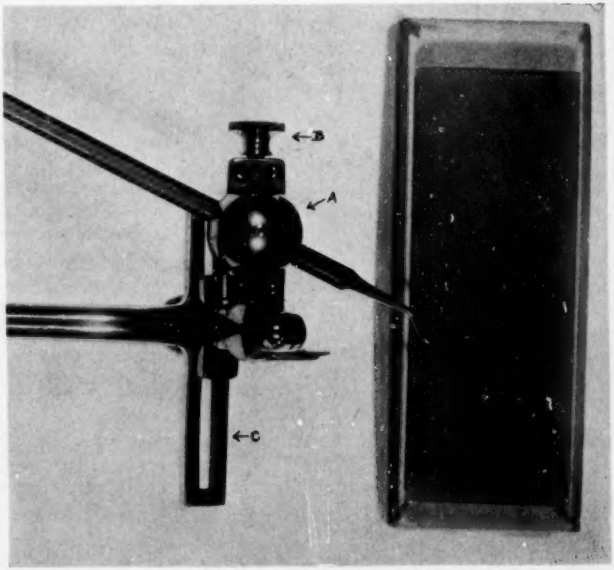

Fig. 16. Head of author's instrument holder for sharpening hoe scalers. The instrument is grasped in a clamp consisting of a split ball in a hollow sphere. This permits the lateral swiveling of the scaler which is necessary to the lining up of the instrument shank with the shaft of the holder as shown. This lining up is further facilitated by the movement of the entire holder head in a transverse slide. When the instrument is properly adjusted, loosening of the thumb nut in the base permits rocking of the instrument during sharpening, the rotation occurring around the center provided by the holder shaft with the scaler blade constituting virtually an extension of this shaft. A, split ball in sphere in which instrument is clamped. B, thumb nut for securing instrument in split ball clamp. C, transverse slide in which head assembly slides.

Carr gave tremendous impetus to specialization in this field. Before his time the profession, on the whole, accepted the old dictum that "pyorrhea cannot be cured," with all the regretful resignation of the fatalist. Even to attempt to treat this disease marked one as having unbelievable optimism. This attitude will be difficult for the young dentist of today to comprehend, but will readily be recalled by the older members of the profession.

The history of the scaler from the time of Carr to the present day is relatively uneventful. This is not to say that there has been no activity in the field of instrument design. To be sure, Carr had explored the possibilities of the hoe scaler to the full. Subsequent efforts in that field were in the direction of attempting to provide a smaller set of instruments without sacrificing applicability too much.

The author, who had used the Carr instruments for a number of years following their introduction to the profession, presented a set of eight modified Carr hoes, (Fig. 17) which with a small chisel and three sickles, the latter modified from the Jacquette set, has been quite widely used. This set, known as the College Set of Scalers was admittedly inadequate for scaling in deep pockets, but was and is useful in the treatment of cases with less advanced lesions.

For more comprehensive coverage a more radical departure in scaler design was introduced, retaining however the general principles of the Carr set. This was the employment of a third bend (Fig. 18) in the scaler shank whereby the shoulder which, in the smallest Carr instrument, frequently prevented the desired application of the instrument by interference with an adjoining tooth, was moved well away from the field of operation. By this means, one instrument would do the work of the smallest Carr instrument and yet would have so much greater range of action that it could also operate satisfactorily in place of the Carr medium-sized instrument. This combination of two instruments in one automatically cut the size of the set from 150 to 100 instruments without the loss of any of the valuable features of the Carr set. These developments date back to the early years of the existence of this Academy.

Fig. 18. Author's modification of Carr scaler designed to permit greater access between teeth for the smaller and more delicate instruments in the set. Note the distance between the "shoulder" (A) and the blade. Six "families" of 8 scalers each took the place of twelve families (short and medium) in the Carr set, reducing the total to 96 instruments. A strict contra-angle was observed in all instruments.

In the year 1920 or about that time, the author, being then closely associated with Paul R. Stillman in post-graduate teaching, became interested in the curet type of instrument which Stillman was using with conspicuous success. Realizing that the curet had some inherent advantages, but realizing, also, that it suffered from certain deficiencies of design, an effort was made to improve this instrument. This was done chiefly by introducing the contra-angle, bringing the blade in line with the handle. Finding that the results were promising, this principle was applied to the Younger-Good set and a set of curets was produced (Fig. 19) having a varied assortment of shapes and sizes. These instruments gave considerable satisfaction. They have been used

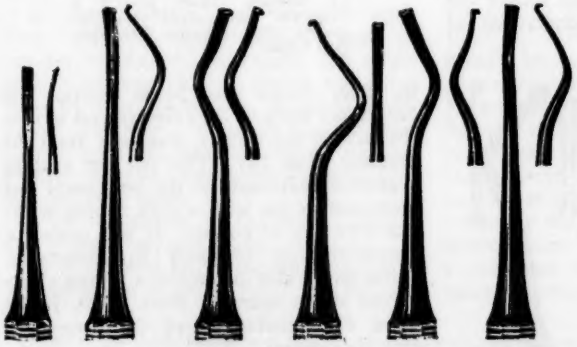

Fig. 17. Part of set illustrating author's modifications of Carr scalers to produce a small set practicable for treatment of incipient cases. At the left is shown the author's chisel for dislodging calculus from the approximal surfaces of the lower anterior teeth.

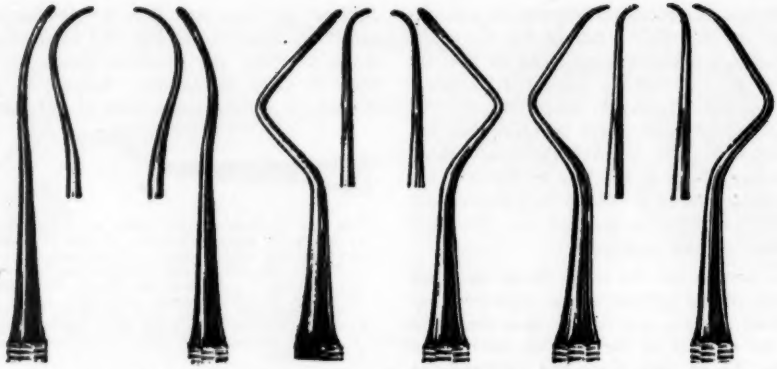

Fig. 19. Part of the set of curets designed by the author. These instruments were modifications of the Hutchinson set, with introduction of a strict contra-angle in each instrument. Control of the instrument is thus greatly facilitated and finger fatigue reduced.

in conjunction with a small set of hoes for many years, each instrument and each type seeming to have a definite place in the instrumentation of the root surface.

During these later years others have been active in the field of scaler design and with valuable results. Thomas F. Bates has done much in the development of the scaler. He has designed some very good small sickles, curets of varying size and curvature, and an interesting set of prophylactic hoes. The latter instruments have the disadvantage of having a curved blade and consequently their angle of application to the tooth is changed as they wear down with repeated sharpening. When new they are, however, excellent for their purpose. Justin D. Towner's set (Fig. 20) embodies many of the good features of the Bates scalers and presents some worthwhile adaptations of other instruments. His sickles (Fig. 21) are unique and useful.

One of the few men who was able, in this modern period, to introduce a new note in scaler design was Julian Smith. He turned the blade of the curet around so that the face, or flat surface, was away from the operator (Fig. 22). This put the cutting edge at the extremity of the instrument and permitted its use with a push motion without difficulty of control. It also made for simplicity and efficiency in sharpening. Julian Smith also introduced a reverse curve in the shank near the blade which facilitated the introduction of the instrument into the pocket.

Space will not permit the mention of many others who have made worthwhile contributions in the field of scaler design.

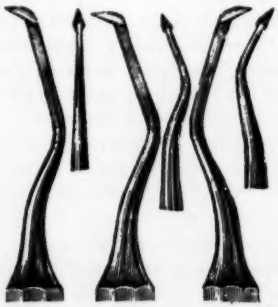

Fig. 21. Sickle scalers designed by Towner. These present a "straight" and right and left models with a slender, but effective blade.

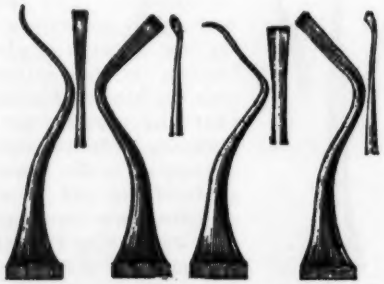

Fig. 20. Part of set of hoe scalers designed by Towner. The angle of application of the blade is different from that in the Carr scaler and permits use of both push and pull motion.

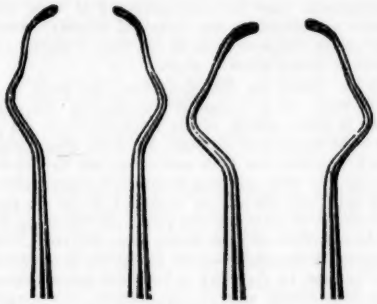

Fig. 22. Part of the set of curet scalers designed by Julian Smith. Novel features were the placing of the cutting edge on the side of the blade away from the operator (as in some of Riggs scalers), also a second contra-angle between elbow and blade which facilitates the introduction of the instrument into pockets.

The Gracey instruments, among others, are excellent and represent an advance in this field.

It is not the province of this paper to discuss periodontal pathology, etiology or treatment, or to discuss the so-called conservative and surgical methods of treatment. It may be proper, however, in relating the story of scaler design, to point out, as has been attempted, the part the evolving scaler has had in the development of systematic and successful periodontic treatment. And it may not be amiss to call attention to what may be considered an indubitable fact, viz., that the scaler in some degree enters into the treatment of all types of periodontal disease, whether this treatment is to be conservative or surgical. Perfection of scaler design and perfection of scaler technic are therefore continuing requirements for success in this field.

In conclusion I wish to acknowledge valuable assistance in tracing the early history of the scaler given by David B. Ast and Rudolph H. Pelzer, of the staff of the Periodontia Department of New York University College of Dentistry.

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A HISTORICAL REVIEW OF ORAL PROPHYLAXIS*

By WILLA YERETSKY, D. D. S.

Grand Rapids, Michigan

EARLIEST HISTORY records the difficulties and discomforts man experienced with his teeth and their supporting tissues. There are references as far back as the fifth century B. C.** in Herodotus, and in 500 A. D. in "Leechdoms" by Saxon "caries and pyorrhoea were not unknown."

In these earliest times, beautiful teeth were considered largely desirable from an esthetic standpoint, both visual and olfactory. A pleasant smelling breath was something of which poets sang. To gain this desirable attribute the early Greeks and Romans spent considerable time on the care of their mouths, using every means possible to clean their teeth.

With the decline of the Roman empire oral hygiene was lost in the dark ages.

As civilization finally emerged, interest in general health began to gain. In 1597 and 1691 there were at least two men, both Dutch, who made brief mention of scurvy and of a relationship between "tartar and alveolar-pyorrhoea."

In 1728, Pierre Fauchard published his famous work, *Le Chirurgien Dentiste*, composed of two volumes, which has given him the title of "the father of modern dentistry." In this important contribution to dental literature Fauchard discussed all phases of dentistry including oral hygiene. He was among the first to realize that cleanliness of the mouth is very important in the preservation of the teeth, as the following statement of his would indicate: "Little or no care as to the cleanliness of the teeth is ordinarily the cause of all the maladies that destroy them." The importance of this conclusion met with little recognition for almost a century.*** Later Fox and Fitch,[1]

*Read at the 25th Anniversary Meeting of the American Academy of Periodontology at St. Louis, Missouri, October 20, 1938.

**See reference to *Ebers Papyrus*, much earlier, *J. Periodont.* 10:26. Jan., 1939.

***See references to Bourdet's work on dental hygiene and that of Serre 1809, *J. Periodont.* 10:9. Jan., 1939.

both Englishmen, wrote at length on diseases affecting the mouth with an understanding of the importance of oral hygiene as a preventive measure.

In 1803, Fox wrote a masterly description of the formation of tartar. He recommended strongly that the teeth be brushed very carefully morning and night to free them of accumulated particles of food. He realized that in some manner, unclean teeth tended to promote the formation of tartar. He says in part:[2]

. . . . Almost every person is subject to a formation of it [calculus] in a greater or lesser degree; in some, the deposit is so habitual and copious, that *without unremitted attention*, their teeth cannot be preserved in a decent state; whereas, in others, it is so small in quantity that the least degree of care is sufficient to keep the teeth perfectly clean.

After sleep, the teeth are usually found covered with a viscid, yellowish mucus, which, if not entirely removed by the use of a toothbrush and washing, adheres to the teeth in those parts not subject to friction during mastication. Through neglect, this viscid mucus gradually accumulates, depositing itself in layers until it acquires a hard consistence, and sometimes a magnitude equal to that of the teeth themselves . . .

In the formation of tartar about the teeth, it insinuates itself under the gums, and detaches them from the necks of the teeth; the gums are thus brought into a diseased state, are subject to inflammation and pain, and at last gradually recede from the teeth. This state of the gums soon causes the alveolar processes to become affected, and absorption in them is induced; so that, in proportion to the increase and accumulation of tartar about the teeth, their natural support is destroyed, they become loose, and at length, by some accident, a large piece of tartar is broken off, when the tooth, being deprived of its artificial support, drops out. In like manner, the other teeth give way one after another, until in a few years the greater number are entirely lost. Persons who lose teeth from this cause, complain that they came away perfectly sound, not considering it as the effect of their negligence; and it is but too commonly the case that nothing less than commencement of the loss of teeth induces them to pay attention either to their cleanliness or preservation. . . .

The deposition of tartar is an unavoidable circumstance, depending upon the effusion and decomposition of saliva; but it is in the power of most persons to keep their teeth free from an injurious accumulation, by carefully washing and brushing the teeth every morning, to remove that soft matter which is deposited during the night, and also by rinsing the mouth after meals, to cleanse them from those particles of food that may lodge about them, and which, being left in the intermediate spaces of the teeth, become changed during the night, and not only contribute much to the formation of tartar, but also produce a tainted breath (and caries of the teeth).

If the constant use of a tooth-brush and water be not sufficient to keep the teeth perfectly clean, a tooth-powder may be used, composed of some substance not possessing any chemical property which can act on the enamel, or of too hard a quality, by which it would grind it away.

When tartar has collected about the teeth, it is to be taken off by means of instruments; this operation is called scaling of the teeth, which is one of the most useful and necessary for their preservation. Much prejudice has been excited against this operation by the very injurious practice of some dentists, who apply the muriatic or vitriolic acid for the purpose either of softening the tartar, or whitening the teeth: the effect of these agents upon the teeth, is to remove the external coat of enamel by its solution, and to give to the teeth a beautiful white appearance immediately after its application. The natural polish of the enamel being thus destroyed, the surface is left rough, and the teeth soon afterwards become dark coloured from the adhesion of the colouring matter contained in the food. But, if this practice of applying the acid be not adopted, and the tartar, as it may accumulate, from time to time, be carefully removed from all parts of the teeth, the gums will be preserved in a healthy state, and absorption of the alveolar processes be entirely prevented.

Remember that this was written in 1803!

Thomas Bell mentions the tooth brush specifically in 1835, and pleads for the frequent brushing of the teeth but urges that the tooth brush be not too hard.

Gradually more attention came to be given oral prophylaxis but never in any proportionate amount commensurate with that utilized for the development of mechanical procedures in restoring damaged parts.

In 1839 Chapin A. Harris wrote:[3]

. . . That there is a greater tendency in some than others to disease of the gums, we do not deny; but this by proper care and attention might, we believe, in almost every instance be counteracted. Our opinion, therefore, is, that the gums, if the teeth be kept *perfectly* clean seldom become spongy or recede from their necks; and that teeth, that are situated in healthy gums, rarely, if ever, loosen much in their sockets.

If this then be true—and that it is we are firmly persuaded—the importance of a strict observance of the purifying of the mouth, cannot, if for no other purpose than the keeping of the gums healthy, and the prevention of a consequent loosening of the teeth, be too strongly urged.

. . . . Such means as are necessary to their restoration to health, should first be resorted to. This done, all that will usually be required to keep them clean will be a tooth-pick, a brush, and pure water. The first should be constructed from a goose-quill, and should always be used immediately after eating, that such particles of food as may have gotten between the teeth, may be removed before they shall have undergone a chemical change. As regards the kind of brush most proper to be employed, there exists a considerable difference of opinion; some prefer a very hard one; others think a brush cannot be too soft;

while others again, give their preference to a medium one, and to this last our own is decidedly inclined . . . The bristles should be about one-half of an inch in length, and be elastic, so that they may be made to reach and act upon all the inequalities of the teeth and with such a brush as this and water they should be thoroughly rubbed several times a day; say—in the morning immediately after getting up and after meals. . . . .

The tooth brush, while highly desirable, was not an accessible article of toilet in remote sections. In these places, it was quite common for frayed twigs to be used as such in the mouth. Even in India, Dr. J. E. Chandler[4] wrote in 1853 of the people as:

. . . quite careful of their teeth. All classes clean them before eating, rubbing them with a clean twig broken fresh from the tree. They are superstitiously exact in this matter, never, as they say, defiling their mouths by putting anything a second time into them. But from some cause their teeth often ulcerate at their roots . . . Such teeth are not difficult to draw, often becoming quite loose . . .

The African negro also pays much attention to keeping his teeth clean. Some tribes rinse their mouths after each meal, others chew gum to keep them clean.

Although in 1557 there is a record of a license being granted to William Thomlyn, an Englishman, to draw teeth and *to make clean teeth*, little was recorded about the process until the nineteenth century.

The condition which today we know as periodontoclasia was first described as scurvy of the gums. It undoubtedly often held a close relationship to scurvy. Differentiation of various forms of periodontal disease could not be made for lack of knowledge. Hence, for many years diseases of the gums were so generally considered scorbutic or of other systemic cause that it was thought physicians only should treat them.

The importance of personal oral hygiene was emphasized by many writers from the beginning of the nineteenth century on. The emphasis was made because it was felt that dental caries was materially lessened when the teeth were clean. Dr. S. T. Beal[5] wrote in 1847:

Those persons who brush or rub away daily all accumulations of saliva or food from between the teeth by passing back and forth, a piece of floss silk, ribbon, tape, towel or the like, and pay particular attention to cleanliness of those organs, never have them thus affected, except in those parts which cannot be reached, as the fissures found on the grinding surfaces of the molars and bicuspids, which indeed often dip through the enamel . . .

This operation (plugging), when perfectly performed, as it ought always to be, not only removes every particle or trace of the disease, but saves the tooth for life, *provided it is always kept clean afterwards.*

Regular periodical visits to the dentist were emphasized in 1850 by William Linton of London who wrote:[6]

To return to the proper course to be pursued in order to preserve the teeth. . . .

Brush the teeth well both inside and out, every night and morning with a moderately hard brush, constructed with three rows of bristles, standing so far apart that the elasticity of the hair may have its full play. Do not confine its operation to simply moving the brush across the faces of the teeth from side to side, but give it a rotary, and as far as possible, a vertical direction, so that the bristles may spring in between the teeth, and free them from the particles of food, and the incipient deposit from the secretion of the tartar glands.

Use also some dentifrice, not of too harsh nature . . . Have the mouth carefully examined at least *once in every three months*, in order that any deposit which may have formed may be removed before injury has arisen from its presence. . . .

It is in order to secure to the patient the detection of decay in its incipient state, that I urge *a periodical visit to the dentist* . . . .

The operation of removing the tartar is too frequently performed in a negligent and incompetent manner . . . If every particle be removed, and the whole exposed surface, both inside and out, be polished with a little finely powdered cuttle fish bone, applied on a piece of common rattan cane, all irritation will speedily subside. . . .

In 1869, the St. Louis Dental Society held a lengthy discussion on "cleaning teeth" as reported in the *Missouri Dental Journal*.[7] It was in this discussion that Dr. Forbes stated for the dignity of the profession that:

. . . if by cleaning the teeth, was meant when coated with tartar, the gums inflamed as a result of that accretion, it was manifestly the duty of the dentist to remove it, and restore the inflamed parts to health. But when teeth were simply dirty, a patient might with equal propriety, ask his dentist to black his boots. It was not his duty to clean such teeth, but to instruct the patient how to clean them, and the material to use, etc. and the dentist should insist upon his desire that this should be thoroughly done before further operations.

Dr. Jones felt it his bounden duty, much against the wishes of his patients sometimes, to remove tartar whenever he found it, and instructed his patients how to take care of their teeth.

Dr. Bowman showed keen insight into the habits of his professional confreres when he said, "Probably not more than one dentist

in ten keeps his own teeth free from tartar and disease and if he fails, with all the means of cleanliness in his hands, to be clean, how can he expect his patients to be so."

An editorial[8] in the same issue of the *Missouri Dental Journal** says:

> Some practitioners regard this operation as unimportant, and look carelessly upon the consequences of its neglect, while others do not feel like giving the required time to this duty; but, convinced as I am of its importance, I am glad that our judicious committee has presented the subject for discussion, the more so as it has hitherto been strangely neglected by the Dental Association.
>
> This operation is usually carelessly performed, in fact some practitioners seem to believe that a little scratching and scraping will suffice, while the truth is that such treatment leaves these organs and their integuments in a far worse condition than formerly; and they offer these services at low prices, 50 cents, 75 cents or one dollar, while I believe that most of those present will agree with me that the thorough performance of this duty is poorly repaid by a fee of $10, $15 or even $25. Gentlemen, such operators have no idea of the meaning of the term 'cleaning teeth.'

There is no case of this kind requiring the services of a dentist that can be finished in one sitting or two, and three weeks and even months of constant treatment only, will conquer some cases.

That California agreed with the economics of the Missouri editor is evident from a *Dental News Letter* published in 1854,[9] where the fees of that state were tabulated as follows: "Extracting $5, filling $5 to $16, destroying nerve $5, scaling $10, . . . " California, at least, had the perception in that early day to see that the financial value of oral prophylaxis equaled any other operative or restorative dental procedure.

In June, 1869,[10] an important meeting was held of the Connecticut Valley Dental Association. Previous to this time John M. Riggs of Hartford, Connecticut, had been an enthusiastic pioneer in treating periodontal disease, or as it was then called "scurvy of the gums," and the society had met to do him honor. Among those men attending this meeting were Levi C. Taylor, of Hartford, an apostle of Dr. Riggs, and David D. Smith of Philadelphia, who was invited to address the meeting.

Dr. Riggs spoke of "twenty-five years of successful treatment of diseases of the gums and alveolar process," which would date his earliest efforts about the year 1844—nearly one hundred years ago. He described the instruments he used and his method of operating.

During this meeting a resolution was made and recorded that Dr. Riggs be known as the originator of the new treatment for so-called "scurvy of the gums."

From this time on interest in the supporting tissues of the teeth and their environment was kept alive and many dentists were made to see the importance of this subject by several crusaders of whom Drs. Riggs, David D. Smith, Henry S. Chase, William J. Younger, and John D. Patterson are outstanding examples.

The *Missouri Dental Journal* was an enthusiastic campaigner in the cause of oral prophylaxis, due no doubt to the influence of its editor, Henry S. Chase. It published an article of his in 1871, on the "Removal of Silvary Calculus,"[11] written for dental students, a part of which follows:

> Be sure that you are ready to perform this operation before you commence. Of course one ought to be ready before commencing any operation, but I speak in this way of this particular operation, because it is *apt to be underrated not only by students, but by older practitioners.*

It is interesting to note that in addition to other equipment which he mentions in detail Dr. Chase suggests. . . .

> pulverized pumice-stone and chalk, for polishing-powders, a porte polisher, and a smooth elm or basswood stick, eight inches long.
>
> A syringe will be necessary also, to be used with a tumbler of clean warm water.
>
> The instruments for the removal of tartar should be small, thin-edged and sharp. Nearly all the scalers found in shops are twice too large and clumsy. Besides the curved-pointed and curved square-edged instruments, you will find exceedingly delicate chisels and hatchet excavators useful.
>
> I would commence on a posterior molar of one side of the mouth, on the lingual surface, and continue around to the corresponding molar of the other side. Before polishing this lingual surface, proceed in the same way with the buccal surfaces of these teeth. Now with the chisels and excavators remove everything on the approximal surfaces.
>
> The scales of tartar are easier loosened by inserting the instrument under their lower borders. After cleaning all portions of the teeth above the gums, the necks, which are under the gums, should secure especial attention. Here, in fact, is the most important work to do; not a granule of this irritating lime deposit should be left in this location, for the smallest one will afford a point of support for a new deposit, and the operation must then be repeated in a few months. Here we find hatchet excavators useful, scraping upwards with the long side of the blade.
>
> The syringe should often be used to force away the debris left under the gums and between the

*Henry S. Chase, Editor.

teeth. The instruments should be wiped on the small napkin after each rinsing in the colored tumbler. The water in the latter should be tepid, and occasionally changed for clean water.

After scaling is finished, the polishing-powder must be patiently used; pumice and chalk.

If the operation has been prolonged, and especially if it has been bloody, another appointment should be made for the following day, to see that nothing has been left undone that ought to be done.

Some teeth appear to be perfectly free from tartar to the unprofessional; but observe that little rose spot on the gum, just at its edge, or below its margin. There is a granule of tartar there, and its rough surface has caused the spark of inflammation which you see in the gum. Remove it.

The under front teeth are often very loose from the absorption of alveoli, caused by present tartar. There is sometimes *danger* in removing the calculus, unless the teeth are *fixed*. Well, then, give them support by softening gutta-percha in hot water and pressing it over the buccal surfaces of half a dozen teeth to be operated upon. After the deposit on the lingual side has been thoroughly removed, we can change the gutta-percha to that side of the teeth and cleanse the buccal surfaces.

The patient may be benefited by using an astringent wash for a few days, in order to hasten the closure of the gums around the necks of the teeth as soon as possible. The sooner and more effectually this is done, the less likely is the tartar to commence its deposit again soon. If the gums are spongy, it will be of service to slit up every festoon with a sharp lancet or knife; the bleeding will be useful, and the cicatrix will assist in causing a shrinking of the part between the teeth.

From then on, most articles had a similarity as to the necessity for cleansing the mouth by the dentist and the need for greater thoroughness. Dr. Taft in his text book on Operative Dentistry did not feel the operation required much skill. He is the only writer who seemed to feel so.

The difficulty then, as now, was not so much in the dearth of material regarding oral diseases but rather in inducing the profession to read the articles or to listen to the lectures and, having induced them, then to persuade them to practice what they had heard. As dentistry became further removed from medicine in thought, the men attracted to dentistry became more and more of a type especially interested in mechanical procedures.

A historical review of oral prophylaxis would necessarily include at least the references we have used thus far in this paper, although the term was originated by D. D. Smith as he was generally called. Toward the end of the nineteenth century he established in his own practice a definite system for the prevention of dental and periodontal disease by manipulative effort. He demonstrated the efficacy of his treatment from time to time to groups of dentists especially invited to see the results in the mouths of a considerable number of his patients.* The oral prophylaxis treatment was defined by him as consisting of the

careful and complete removal of all calcic deposits, inspissated secretions, bacterial plaques, and all accretions which gather on the surfaces of the teeth, and between them, especially at the gum margins; followed by thorough polishing of all tooth surfaces by hand methods.

It included also the *required* coöperation of patients in personal home care of the mouth. Dr. Smith was adamant in this requirement and would send his patients home if their mouths showed evidence of neglect on their part after he had instituted treatment.

Many dentists who visited Dr. Smith's office expressed their surprise at the spectacular results he had obtained and stated that they had never before seen really healthy periodontal tissues. Some of them became such enthusiastic converts to his highly perfected methods as to relinquish the general practice of dentistry in order to specialize in what was called oral prophylaxis although it included most of what is today known as periodontia.** For those reasons Dr. Smith might be called the apostle of modern periodontia.

Like so many others his interest was first aroused from the standpoint of preventing decay. He felt all caries could be controlled by extreme cleanliness and so lectured frequently to that effect. He concluded that ninety per cent of the amount of tooth decay could be eliminated by his method of preventive treatment. He insisted that hand methods with orangewood sticks and points were the only efficient means of really polishing the teeth.

*See Testimonial presented to Dr. Smith in 1906 by one such group, *J. Periodont.* 10:16. Jan. 1939.

**Four of the seven members of the organization committee of the American Academy of Periodontology (1914) were followers of Dr. Smith's methods and three confined their practice to them as a specialty.—Ed.

Since Dr. Smith's description of polishing the tooth surfaces cannot be improved upon, a part of his first published article is here quoted in full.[12]

> Many who have given the matter but passing notice seem unwilling to believe that for the accomplishment of this object there can be any distinguishing difference between wheels operated by power and the orangewood sticks and pumice in the hand, guided by educated intelligence. To such it may be said, a true comprehension of this treatment necessitates abandonment of all engine wheels and a resort to the hand use of the orangewood sticks and pumice alone. In the rapid revolution of polishing wheels by power, acquirement of that stimulating energy in the tooth which is a characteristic of the hand process is impossible, and the important after-effects are entirely wanting. The delicate sense of touch is lost through the wheels, and the surfaces treated will receive the force of the polisher uncertainly and unevenly. The wheel cannot be carried to the festoonings of the gums, the point where treatment is most needed, without injury to them. The mechanical difficulties alone, coupled with lack of adaptation of the power polishers, if there were no other reasons, point unmistakably to the diagnosing touch and the delicate use of the hand instruments.
>
> They furnish the only rational means yet devised for the successful removal of the secretions, excretions, and any and all accumulations from the necks of the teeth and from exposed tooth surfaces; for polishing the teeth; and, last but not least, for the stimulation of the vital functions within the teeth to a condition of normal activity. No wheels, no medicament nor medication; no system of cleansing suggested to nor practiced by patients, will accomplish this end. It must be done by educated, skillful dentistry, enforced and repeated as a vitiated environment may demand it. The time limit thus far found to produce the most satisfactory results for the arrest of caries is, for frail temporary teeth, two to three weeks; for adults, once a month.

Dr. Smith was not the first to use wooden sticks for polishing tooth surfaces. In 1869, an article in the *Missouri Dental Journal* tells of the value of using pine sticks for removing green stain and accretions from the teeth.

Modern machine age methods have tempted many dentists to the use of the rotary brush and rubber cup for cleansing the teeth. It is unfortunate that so many are losing sight of the welfare of the teeth of their patients in order to save a little time. By so doing they minimize the importance of the service they are rendering and so cannot hope to impress their patients with the importance of self care of the teeth.

Dr. Smith emphasized the need for the coöperation of the patient in the care of his own mouth without which any amount of work done by the dentist would be of no avail.

The toothbrush should be small enough to easily reach in every part of the mouth. The bristles should be sufficiently stiff to break up and remove tenacious viscid deposits.

Opinions on the time of brushing the teeth vary, the most usual advice being to brush upon arising and just before retiring. It is advisable to use only a very mild dentifrice in the form of a powder.

Dr. Smith urged over and over that the dentist instruct himself in the care of the mouth and then teach the patient how best to care for it. He felt that the mouth should be cleansed *before* each meal.

He also was one who taught that systemic infection could result from an unclean and unhealthy mouth.

There was a tendency on the part of the dental profession at this time (the early part of the twentieth century), to regard "alveolar pyorrhoea" as a constitutional disease and so considered it should be treated by physicians. Dr Smith insisted that while the cause might be simple or complicated, the local irritation must be removed in any case and therefore, it was incumbent upon dentists to remove it. He maintained emphatically that the dental profession must not shirk its responsibility.

He said: [13]

> However firmly engrafted the present teaching and methods of practice in dentistry, it is clear to the impartial observer that they are as inadequate as curatives as they are ineffective as preventives. The challenge that more teeth are ruined and more disease engendered through ignorant, unwarranted, sometimes malicious interference on the part of dental manipulations than are permanently saved by an educated, intelligent, skilled practice, we believe may successfully be made.

Today, forty years later we cannot improve on Dr. Smith's method of polishing tooth surfaces. There have been improvements in diagnosis, technique of operating, of instruments, but the fact remains that hand polishing with porte polishers and very fine abrasives is still the best method. Moreover, periodic treatment and control of tooth environment is still as advisable and for the same reasons that this firey evangelist exhorted.

Tooth brushes have been improved. The education of the laity through the medium of public press has progressed to a point which would astonish Dr. Smith. To combat the evil effect of lurid advertising, dentists have been compelled to recommend proper brushes and safe dentifrices.

The horizontal method of brushing advocated by Dr. Smith is frowned upon today because of the danger of abrasion of the teeth. Other methods have been advocated which are more successful.

Finally, interest and enthusiasm in periodontology grew to the point where a group of those most keenly aware of its importance founded the Academy of Periodontology in 1914.

REFERENCES

1. Fitch, Samuel Sheldon, M. D., Surgeon Dentist: *A System of Dental Surgery*, second edition, 1835, p. 22.
2. Fox, Joseph, Surgeon Dentist: *The Diseases of the Human Teeth*, 1855, p. 296.
3. Harris, Chapin A., M. D., D. D. S.: *American Journal of Dental Science*, 1:9. 1839.
4. Chandler, J. E.: *Dental News Letter*, 1853, p. 141.
5. Beale, S. T., M. D.: *Ibid.*, 1:15. 1847.
6. Linton, William: *Ibid.*, 6:11-12. 1852.
7. Society Proceedings, *Missouri Dental Journal*, 1:21. 1869.
8. Editorial, *Ibid.*, 1:52. 1869.
9. *Dental News Letter*, 8: 1854.
10. Society Proceedings, *Missouri Dental Journal*, 1869.
11. Chase, Henry S., M. D., D. D. S.: *Missouri Dental Journal*, 1871.
12. Smith, D. D., D. D. S., M. D.: *International Dental Journal*, 20:16-21. 1899.
13. Smith, D. D., D. D. S., M. D.: *Ibid.*, 22:826. 1901.

President's Address*

By A. W. Bryan, D. D. S., F. A. C. D.

Iowa City, Iowa

Tradition seems to provide that a collection of words and ideas be presented each year at the opening session of the Academy, such collection to be labeled with the awe inspiring title of "Presidential Address." The chief effect of such a custom is to furnish the basis for recurring nightmares for the president during the interval between the Council meeting in February and the opening of the annual meeting. Despite assurances to the program committee and the Council itself that these formalities might well have been dispensed with for the current year, their insistence finally won out and upon receipt of the printed program a few weeks before the meeting, we are faced with the fact that the document *must* be prepared.

This being the first opportunity to address the Academy since becoming its president, acknowledgment of appreciation for the high honor bestowed upon me is now made. The American Academy of Periodontology is recognized as a group of individuals with the highest ideals in the purposes and aims of its organization. Its programs have always been highly scientific. During the twenty-six years of its existence it has, in the character and quality of its accomplishments, set a standard for other organizations to follow. It is no small honor and no mean responsibility to be chosen to guide its progress through a year of its life. If the year has been successful and the work of the Academy has borne fruit, credit is largely due to other faithful officers and committeemen and the contributors to this program.

While the duties of all of our committees are important, I should like to mention specifically a project in which the Academy has taken the lead, and for which much credit is due Doctor Harold Leonard. He was responsible for getting an organization started for the formation of specialty boards in the dental field and the completion of the American Board of Periodontia will soon be realized. We appreciate the time and effort that has been given by him and his committee.

* Read at the 26th Annual Meeting of the American Academy of Periodontology, at Milwaukee, Wis. July 13-15, 1939.

The Academy supports one of the outstanding publications in dentistry. Our Journal of Periodontology is beautiful in makeup, satisfying in content, and every member takes great pride in it. A publication of this nature should have much wider circulation and the work of the Journal Subscription Committee should be heartily supported and supplemented in every way possible by each member.

Presidential addresses are supposed to contain recommendations. I have none in particular to make, but it does seem to me that any effort that might be made by the Academy as a group or its members individually to stimulate the interest of the general practitioner in periodontal pathology would lead to a great deal of good. Many of our programs have had discussions of ways and means by which such interest might be aroused and one of the round table discussions this year will consider it. The most serious result of the lack of interest of the general practitioner lies not in his unwillingness to attempt treatment, but in his neglect to recognize early pathology. The patients are thus carried along with a false sense of security, trusting implicitly in their dentist to tell them when there is disease, and finally reach a stage of advanced periodontal destruction.

Dr. G. V. Black in his book, *Special Pathology,* in discussing diseases of the investing tissues says, "The insidiousness of this class of disease is such that not many, even dentists, have been regularly in the habit of noticing them during their early stages. A little redness here and there seems to be of no consequence, and, after a time, when the case has gone too far for remedies to be effective, the dentist will find the disease very serious, and incorrectly suppose that it is comparatively recent in its beginning." These words were written many years ago. Has there been a great deal of improvement since? Probably every periodontist present in this group has a case in mind that illustrates this point.

It may be that the Academy cannot do much to correct this condition—it may not be one of its functions to do so. It is logical to believe, however, that the greatest improvement will come as the undergraduate dental students are better trained in diagnosis and take their places in the field of general practice. The Academy can help here in its influence on dental faculties, especially through its members who hold positions in the colleges. Let us all do what we can to improve oral diagnosis.

A careful examination of the program of the Academy for this meeting impresses one because of the many practical papers and clinics that it contains. The members responsible for the building of the program are to be congratulated.

In closing, I wish to thank the officers, committees, and members who have been so gracious and generous in their assistance in the work of the year. The year has been pleasant because of the work with them.

The Centennial of American Dentistry*[1]

By ARTHUR H. MERRITT, D. D. S., M. S.,

New York City

ON MARCH 17, 18, 19 and 20, 1940, in the City of Baltimore, under the auspices of the American Dental Association, American dentistry will celebrate the centenary of its birth. This should prove to be an epoch making event in its progress. Never in the life of any living member of the profession, will there be an occasion of like importance. Already, plans are under way to make this a memorable affair. A program is being prepared that will be unique.

On Sunday, March 17, the American College of Dentists, in coöperation with several other dental organizations, including the American Dental Association, American Association of Dental Schools, American Association of Dental Editors, the International Association for Dental Research and

* This article was published in the November issues of most dental publications, but owing to the delay in the publication of this July issue of the *J. Periodont.*, it is included here to again remind our readers of the importance of the Centennial Meeting in Baltimore.

[1] This is the second in a series of articles being written by the President of the American Dental Association.

Omicron Kappa Upsilon, will put on a program showing the steps by which dentistry in this country, has advanced to its present high standing. These will be represented by Organization, Journalism, Education, and Research.

In each of the several scientific sections to be held on March 18, 19 and 20, three essayists, chosen for their known qualifications for the assignment, will present papers. Each has been selected as representative of the best in his field. Men of high distinction, outside of the profession, will address the general assembly.

On two of the three evenings, a pageant depicting the history and progress of dentistry will be presented. The cast of more than two hundred will all be professionals. Rehearsals are now under way to make this an outstanding feature of the celebration.

Attendance at the meeting in Baltimore should be an unforgetable experience, one which no dentist, interested in the history and progress of his profession, can afford to miss.

This centennial celebration has two main objectives, the first of which is to acquaint the members of the profession with the travail, birth, development and progress of American dentistry. It is an inspiring record. Beginning as a mere craft, dentistry has in the brief space of one hundred years, developed into a profession recognized throughout the civilized world for its excellence. It has made health service its goal. It has transformed an occupation for livelihood, into an occupation for *service*. To the world, it has given the greatest boon within the gift of man—surgical anesthesia. These facts should be reëmphasized to the members of the profession for their inspiration and encouragement. In order that this may be done, plans are being considered for simultaneous celebration of our centenary by every dental society in the United States, possibly on February 1st, the anniversary of the date on which the charter for the first dental school was granted. This will add greatly to the interest of the occasion and make possible the participation of those who may not be able to attend the celebration in Baltimore.

The second, and equally important objective, is to take advantage of the opportunity which the occasion offers, to inform the public of what dentistry has achieved in the past, the service it is prepared to give in the present, and its plans for the future. It should, in a word, be made the occasion for widespread publicity. Never was there provided, a better opportunity. *It must not be allowed to go by default.* To do this properly, funds in considerable amounts will be required. With a view to paying some part of this cost, and at the same time give greater publicity to the event, commemorative stamps will be sent to the members of the profession by the committee having the celebration in charge. Purchase these stamps when they arrive and affix them to your letters as you do the Relief stamps. Send in your dollar or as much more as you can. The cost will be trifling compared to the educational value of the plan. Also publicize dentistry's centennial among your patients. Tell them of what American dentistry has accomplished in the first century of its existence. And lastly, *make your plans now* to attend the four days celebration in Baltimore next March. With *your coöperation*—you who are one of the 45,000 who make up the membership of the American Dental Association—our centennial celebration can be made an unqualified success—a memorable event in the history of American dentistry. *It needs only your coöperation to make it so.*

THE NATIONAL DENTAL CENTENARY CELEBRATION

March 18, 19, 20, 1940

BALTIMORE, MARYLAND

Editorials

The American Board of Periodontology

On Friday, July 14, 1939, at the Wisconsin Hotel in Milwaukee, Wisconsin, the American Board of Periodontology was formally organized. This was the culmination of two years work by a committee on specialization of the Academy of Periodontology, started by the recommendation in his report of President Edward Spalding in 1937. The members of the Board are Doctors Dickson G. Bell of San Francisco, M. Monte Bettman of Portland, Oregon, A. W. Bryan of Iowa City, Iowa, Austin F. James of Chicago, Olin Kirkland of Montgomery, Alabama, Harold J. Leonard and Arthur H. Merritt, both of New York City. Officers for the year are Dr. Merritt, chairman, Dr. Kirkland, vice-chairman and Dr. Leonard, secretary-treasurer. A constitution, rules of procedure and by-laws were formally adopted. The Board is arranging at the present time for incorporation.

The purposes of the Board primarily are three fold: to set up standards of qualification for those who wish to be recognized as competent periodontists, to examine and certify those who are qualified and wish to be certified and to publish a roster of those who are certified. A secondary purpose, which is perhaps more important than the primary one, is to stimulate the development of adequate undergraduate, graduate and post-graduate teaching in periodontology to the end that dentistry may become a true oral health service instead of a series of manual arts.

For some time the candidates for certification will be well recognized periodontists of ten or more years standing. The qualifications for examination of these candidates will necessarily be quite different from that of candidates after 1944, when it is expected that graduate courses leading to a degree will be available in dentistry by which persons wishing to become highly proficient in periodontology may get formal university education and training as part of their preparation for it. The constitution provides that prior to 1944 practitioners who for ten or more years have been recognized sufficiently by their professional confreres as highly proficient in periodontology so as to have patients generally referred to them for periodontal treatment, or who have for that length of time been teaching periodontology in dental colleges, and have made well recognized literary and scientific contributions in the field of periodontology may be considered by the Board to have satisfied the educational requirements. The candidate must satisfy the Board as to his graduation from a recognized dental school, his membership in the A. D. A. or equivalent foreign national dental association, his high ethical and professional standing in the community and his professional experience. He must furnish a list of papers and books which he has published and lastly he must submit reports of ten cases of varied character which have been observed and treated by him. A fee of fifty dollars is charged for the examination and certification if successful. If a candidate fails in an examination, he may, at any time within three years, be readmitted to examination without an additional fee.

Fees collected by the Board are used solely for the expenses and purposes of the American Board of Periodontology.

It is a policy of the Board of Periodontology, unlike the American Board of Orthodontics, not to insist on limitation of practice to the specialty as a prerequisite to obtaining or retaining certification in periodontology. Thorough oral diagnosis, treatment planning and mouth rehabilitation are so much a part of adequate periodontal treatment that no definite limitation is desirable. In fact, periodontology corresponds to dentistry as internal medicine does to the general practice of medicine. Certification in periodontology should mean that one is highly qualified in the diagnosis and treatment of problems of mouth health particularly those relating to the supporting structures of the teeth. This is far broader than mere expertness in removing subgingival deposits or resecting gingival tissues over pockets and instructing patients in home care.

There will, of course, be those who will question the wisdom of having certifying machinery in a field like periodontology and who will see no advantage to themselves in becoming certified even though they might qualify. In the medical specialties the need for certification is more apparent since it is becoming increasingly difficult to secure hospital or college appointments on the specialty staffs unless one is certified in the appropriate specialty. In dentistry, there is, at this time, no corresponding impelling influence to force candidates to the expensive preparatory course necessary for certification. Such pressure will probably develop with time.

On the other hand, certification is bound to come through the legal necessity to protect the public. In surgery and orthodontics, the situation has become particularly acute in the large cities where dentists who can not even succeed in general practice, set themselves up as specialists in exodontia or orthodontics with virtually no preparation beyond that required for license to practice dentistry. The results on their patients are frequently tragic but because of the size of the city and political connections, they may be able to continue indefinitely. The grievance committees of the dental societies and the state boards of dental examiners are keenly aware of these bad practices and are seeking ways of controlling them. The result is agitation for laws controlling the practice of dental specialties. Periodontology is usually included when such laws are passed as they have been in Illinois, Tennessee and elsewhere. Since state boards of dental examiners do not feel themselves competent to examine the qualifications of specialists, it seems wise for the specialty organizations to provide boards who are competent, to coöperate with the dental examiners in these matters.

Furthermore there is a need which every dentist feels from time to time, for a list of competent experts to whom cases may be referred for special care either in the immediate vicinity or in other parts of the country when patients are moving away. A book "The Expert," has been published for some years by a layman in St. Paul, which has such a list as carefully prepared as a layman could make it, and this has filled a real need. However, a book published for profit by a layman in which dentists pay to have their names published cannot be considered a satisfactory ethical method of establishing expertness, no matter how conscientious the publisher may be. The Academy members have the Academy roster which is a help to them, but not to dentists in general. Furthermore, the present Academy membership is not by any means official assurance that the member is highly qualified, but only that he is interested in periodontology and is ethical so far as the Council of the Academy can learn. There is need of an official list published by a professional organization recognized as competent which should be in the hands of every dentist, physician, hospital, or clinic that desires it. As more and more orthodontists, exodontists and periodontists become certified and the list of certified experts becomes large and well distributed, the desirability of certification will increase.

—*H. J. L.*

Recording Clinical Observations

THE IMPORTANCE of recording the clinical observations of dentists has not been fully appreciated. Much could be learned about dental caries from experienced practitioners in dentistry who have used their opportunities to observe, study and compare the teeth of generations of individual families regarding resistance and susceptibility to this common disease. A compilation of their opinions and conclusions would contribute imeasurably to our understanding of dental caries, fully as much as the results of laboratory researches carried on under artificial conditions entirely foreign to the natural, but constantly changing, environment of both the patient and his teeth.

If what we know about the causes of dental caries were applied generally it would revolutionize dental practice. The same is true of the causes of periodontal diseases.

It should be our habit to note data and findings in all cases on uniform case record sheets. These, properly classified and evaluated, would be most enlightening.

—*G. R. S.*

ABSTRACTS AND EXTRACTS OF CURRENT DENTAL LITERATURE FOR 1938

Periodontal Histo-pathology, Periodontal Bacteriology, Other Researches, Clinical Etiology, Symptomatology and Diagnosis

(a) Periodontal Histo-pathology

(Continued from 9(2):89. July, 1938)

190—Adrion (Prof. Dr. med. et med. dent.): **Beobachtungen über die entwieklung der gingivitis auf den knochen.** Observations on the influence of gingivitis on the bones [alveolar]. *D. Z. W.* **29**: July 22, 1938.

The new trend is to relate paradentosis to the condition of the organism as a whole, and to see it as an illness of the whole body. The opinions of a few of the author's colleagues on this question are mentioned, of Siegmund and Peter especially. Recently, the condition of C-hypovitaminosis in connection with paradentosis has aroused the greatest interest.

Wannemacher emphasizes that, in an age of "alveolar-pyorrhea," we have taken account almost entirely of the condition of gingivitis. Osseous changes are often too strongly emphasized in judging clinical pictures, with the result that they are not well understood. There is a relationship between inflammation of the gums and osseous changes, and treatment of gingivitis produces effective therapy of paradentosis.

Six illustrations of sections through teeth and paradental tissue of gingivitis cases, are shown with descriptions of the defects, their histology, and interrelationships. The following conclusions are given: Inflammation of the gums leads directly and indirectly to osseous decomposition; every case of gingivitis can lead to osseous decomposition and its consequences; gingivitis therapy is paradentosis prophylaxis; it is important to give sufficient attention to gingivitis in all dental therapeutic considerations.

—*M. B.*

191—Brinch, O.: **Über einige bisher ungekannte pathologische Gewebsveränderungen in der Pulpa und in Paradentium in einem falle von skorbut.** Some heretofore unknown pathological tissue changes in pulp and paradentium in a case of scurvy. *Z. Rund.*, **16**:699. 1938. (Originally in *Dtsch. Zahn. Mund. und Kieferheilkund.* **5**: 1937).

Dr. Brinch dissected a cadavar of a man 40 years of age who died of scurvy, and found, among other degenerative changes, conditions in the dental tissues which have up to now not been described. These are in the pulps of front teeth, in granulation tissue of gingivae, in paradental spaces of front tooth region, especially in molars. It was thought due to the secretion of a substance through the capillaries which caused changes in the tissues. In microscopic sections is seen a circular, segmental or arch-formed line, which runs without interruption diagonally across various tissues. In the bones, there is an abnormally heavy deposit of collagenous tissue in the matrix. This is also the site of a typical porous condition of bone. Osteoblastic bone apposition is as sparse as resorption, and then only on the marginal border of the alveolar process. The attachment of the tooth is thus destroyed, so that the alveolar walls are defective in many places.

Brinch blames the formation of course-fibred, hetero- and paraplastic bone tissue on a diet of many years standing: bread, butter, eggs, dry meat slices, smoked bacon, and coffee; no fresh fruit, potatoes, or other vegetables.

Pathological tissue changes may be ascribed to scurvy, traumatic influence on the paradentium, and a weakening of the vascular system.

—*M. B.*

192—Carranza, F., and Erasquin, R.: **Le paradentium normale. (Synthèse bibliographique).** The normal paradentium. (Bibliographical synthesis). *La Rev. de Stom.* **4**: 1939. (Originally in *Revista odontologica.* **11**: 1938).

1. On teeth that have not yet functioned: the cementum is uniform and thin;

the periodontal membrane is uniform with longitudinal fibers; the alveolus is without compact tissue, with a unique form of spongy tissue.

2. On teeth which function normally: the cementum is thick and is hyperplastic where the tension is strong; the periodontal membrane is irregularly thickened, and the fibers are oblique; the alveolus presents a bed of compact bone.

3. On teeth which function excessively: in regions of excess pressure the periodontal membrane is necrotic to a point where the root touches the alveolar wall; in this region, granulation tissue appears which produces resorption of bone and enlargement of the periodontal space.

Root resorption is rarer than alveolar resorption, and Kronfeld thinks that in order to occur the intervention of a constitutional factor is necessary. On teeth which do not function, having lost their antagonists, there is seen a thickening of the cementum at the apex and bifurcation of the roots, as if to cause expulsion of the tooth; further, the periodontal membrane degenerates, loses its oblique fibers, and is often filled with fat. Compact alveolar tissue changes to spongy tissue.

—*M. B.*

193—Coolidge, Edgar D., M. S., D. D. S.: **Traumatic and functional injuries occurring in supporting tissues of human teeth.** *J. A. D. A. & D. Cosmos*, **25**:343-57. Mar. 1938.

The report is introduced by a comprehensive review of the work of others and is a histologic study of the periodontal tissues of fifteen human jaws showing functional or traumatic injuries. Pathologic changes in bone, periodontal membrane, and root surfaces resulting from abnormal or excessive functional stress are described and well illustrated as are also various phases of the processes of repair of cementum.

The pathological changes shown are similar to those produced on the teeth of animals by excessive force effected by orthodontic appliances. The author summarizes the changes as "hemorrhage, thrombosis, hyaline degeneration and necrosis of the periodontal tissue, excessive bone resorption, root resorption, and fractures of the cementum from the root surfaces."

Apparently the periodontal tissues of all ages are susceptible to excessive stress but repair of the damage is easier in the young person, where they are quickly repaired if the stress is relieved and if the injury has not been of too frequent occurrence or over too long a period of time.

An important statement of the author of value to periodontists especially is that "a normal stress may become excessive when the capacity of a tooth to withstand heavy stress is reduced by lowered resistance or by loss of the supporting structure." In this case the cementum is more liable to fracture.

See a three-page digest of this report, illustrated, in *The 1938 Year Book of Dentistry*, pp. 66-70.

—*G. R. S.*

194—Meyer, Dr. W.: **Histologische Bilder der primären akuten apikalen parodontitis.** Histological picture of primary acute apical paradentosis. *Schw. Mschr. f. Zahn.* **3**:313. 1938. (Originally appeared in *Deutsches Zahn, Mund, und Kieferheilk.* **4,5**:307. 1937.)

Instrumental extirpation of central infected pulp was performed; six hours after this, suppurative inflammation was again found in the pulp tissue. Speedy diffusion was promoted by a mechanical pressing through of the suppurative material.

After four days, the inflammation was somewhat extended towards the neck of the tooth. In the vascular nerve fissures were found numerous small and large abscesses. The fibre fascicles were thereby destroyed leading to a loosening of the tooth.

After fourteen days, resorption lacunae were observed in the fundus of the alveolar process; in the abscesses of the dental periosteum granulation tissue was found. The peridental tissue was widened as shown by X-rays, and the deposition of bone initiated. Resorption and deposition were often separated only by a fraction of a millimeter. New bone deposition occurred directly on the site of the old bone.

After several weeks, apposition predominated considerably over resorption; the laying down of new bone was carried on from the peridental spaces without previous resorption. Transformation of bone marrow into fibrous pulp followed.

—*M. B.*

195—Westin, G. and V. Kalnins: **Pathogenesis of marginal osteitis.** *Norske Tannlaegef.* **48**:274-348. Mar. 1938.

Report of a histologic study of the effects of diet on the production of marginal

osteitis. See *The 1938 Year Book of Dentistry* for an extensive digest of this research, pp. 71-78. Illustrated.

—*G. R. S.*

(b) Periodontal Bacteriology

(Continued from 9(2):91. July, 1938)

82—Bibby, Basil G., B. D. S., Ph. D.: **Determination of percentage occurrence of various groups of mouth bacteria.** *J. D. Res.* **17**:265-72. Aug., 1938.

Due to our limited knowledge of the cultural requirements of oral bacteria direct smear examinations seem to offer the most practical and reliable means of making differential counts of these microörganisms. Since the surface areas of mouths and teeth vary so greatly as does also the retention areas for debris containing bacteria, the total number of microörganisms in a mouth has little bacteriological significance.

A method is described which gives a fairly accurate estimate of the percentage distribution of different microörganisms in the mouth by *direct smear* counting. While it is not intended that this should supplant cultural procedures it may be used to advantage by guiding and supplementing them. "It is hoped that the application of this direct smear method to the flora from pathological conditions may point to changes in the percentages of different groups of organisms which will give point to protracted cultural studies of such groups."

—*G. R. S.*

83—Brooke, James W.: **Regional study of bacteria in clinically normal mouths.** *J. D. Res.* **17**:57-67. Feb., 1938.

Since the practicing dentist is dependent upon the stained smear for diagnosis and since this to be of value must be based upon a tabulation of bacteria which are *normal* to *certain regions in normal mouths*, such a tabulation should be available, but unfortunately is not.

There has been considerable doubt expressed by a number of investigators as to the fusiform bacilli and spirochetes being the chief malefactors in Vincent's infection.

Brooke found both of these microörganisms in 45 out of 49 normal mouths. In ten of these mouths at least, it was impossible to distinguish the smears from those taken from acute Vincent's infections. It is of questionable accuracy to diagnose Vincent's infection solely from the appearance of a smear, or to claim the absence of this infection, in the presence of positive clinical signs.

More gram positive staphylococci were found in the region of the posterior inferior molars and more frequently than in any other locality in the mouth. The author suggests that this may explain this region being the most usual site of post-extractive infections.

The importance of fungi as possible etiologic factors in mouth diseases should not be overlooked since they are very numerous and may often be mistaken for certain bacteria, resembling them in shape.

—*G. R. S.*

84—Hine, M. K. and G. P. Berry: **Morphological and cultural studies of the genus fusiformis.** Abstr. copied from *J. A. D. A.*, **25**:165. Jan., 1938.

Studies were made of 104 strains of fusiform bacteria isolated from the mouth. On the basis of well-defined morphologic and cultural differences, the strains were divided into three "species" which resembled the *Fusiformis nucleatus, Fusiformis polymorphus and Fusiformis dentium* of Bergey. Fermentation tests differ within each "species" and suggest the possibility of further subdivision. Photographs illustrate the different structure and colony forms of the three "species." — *J. Bacteriol.*, 34:517, 1937.

—*B. G. Bibby*

85—Lanier, W. D.: **Sulfanilamide in oral infections,** in *Medical Bulletin of Veteran's Administration,* Washington. July, 1938. From Abstr. in *J. A. M. A.* **111**(13): 1147. Sept. 24, 1938.

Lanier used sulfanilamide as routine in oral infections except in Vincent's. Tablets from ½ to 5 grains were inserted in sockets after extraction of more than 100 teeth which had had advanced pyorrhea pockets, and in more than 250 with chronic periapical infection. Very few cocci were found 24 to 48 hours after extraction in cases treated in which many of these organisms had been demonstrated at out-set. There was marked decrease in after soreness and no pain or dry sockets.

(c) Other Researches

(Continued from 9(2):95. July, 1938)

83—Abt, Arthur F., M. D., & Chester J. Farmer, A. M.: **Vitamin C. Pharmacology and therapeutics.** *J. A. M. A.* 111(17):1555. Oct. 22, 1938.

Knowledge of the action and uses of Vitamin C is growing rapidly because of chemical processes and methods for estimating quantities in the body fluids and tissues and for its synthetic production. Massive doses can now be given and persons allergic or for any reason unable to take fruit juices can be supplied with the synthetic preparation of Vitamin C. The article is very comprehensive. Its authors have made a critical study of the research experiments and find that many claims for Vitamin C have yet to be verified. They apparently are not convinced of the existence of a "pre-scorbutic state" or latent scurvy.

Exact diagnostic means for its discovery have not been found and in order to prevent the condition the minimal human requirement must be definitely known. Definite relation of Vitamin C to scurvy is of course unquestioned; also it seems pretty well established that the fetus is dependent for its source of Vitamin C on the maternal diet, and congenital scurvy is likely to result if this intake is extremely low. Gingivitis and hemorrhage into the gums are important and striking symptoms of scurvy. Hanke's familiar experiment with children is cited; and Wolbach's experiments on guinea pigs from which he concluded that teeth in process of formation may be unfavorably affected by lack of Vitamin C; and working with Bessey and Boyle, Wolbach concluded that Vitamin C was important in "systemic pyorrhea." It is generally admitted that adequate Vitamin C is necessary for normal tooth growth and structure, and healthy gingivae in man, but authors consider that there is as yet insufficient knowledge about these conditions. It would seem (to this abstractor) with the fact well established that Vitamin C is concerned with the "formation of colloidal intercellular substances" and primarily those of mesenchymal origin "including those of the capillary wall, dentin, cartilage and the matrices of bone," it quite logically follows that it is of prime importance in dental and oral conditions. Furthermore, J. C. Aub has found that Vitamin C is a factor in calcium deposit in bones, probably because of the necessity of adequate amount of this vitamin for the normal production of the organic matrix into which lime salts are to be deposited. Our present knowledge of therapeutic indications and implications for Vitamin C should be a spur to renewed investigation.

—C. R.

84—Bessey, Otto A., Ph. D., and S. B. Wolbach, M. D.: **Vitamin A. Physiology and pathology.** *J. A. M. A.* 110(25):2072. June 18, 1938.

Vitamin A is a derivative of carotenoid yellow and red pigments from plants of wide distribution, from bacteria to garden products. The physiology of Vitamin A is particularly interesting. The liver acts as its principal storage reservoir. Additional importance is given to milk in infant diet because in the new born the reserve of Vitamin A is very low. A deficiency produces specific pathological changes in many epithelial structures. Epithelium atrophies and in the reparative process the basal cells proliferate and the new product differentiates into a stratified keratinizing epithelium which is comparable to epidermis in all its layers. This new tissue is identical in structure no matter where located. Restoration to original normal type is rapid when Vitamin A deficiency is corrected. Melanby & King have thought that loss of neurotrophic control from Vitamin A deficiency might be partly responsible for pyorrhea and other disease of periodontium and even of caries. "In all probability Vitamin A deficiency during the formative period of teeth outranks in the human being all other vitamin deficiencies in importance."

—C. R.

85—Beust, Theodore B., D. D. S.: **Genesis of the periodontium.** *J. A. D. A.* 25:115. Jan., 1938.

It is generally accepted that the periodontium is a product of the metamorphosis of the tooth sac. The lowest animal in the vertebrate scale known to possess a periodontium is the alligator. It is shown by a careful study of sections of the jaws and erupting teeth of two fishes, the *Sargus* and the *barracuda* pike, that fibrous structures developed from the tooth sac serve at least for a time to support the teeth until they

become ankylosed, functioning identically with the periodontium of mammals.

Since fishes belong to a zoölogical class below the mammals this evidence "serves to further shorten the gap" between them.—Interesting illustrations.

—*G. R. S.*

86—Bober, H.: **Reduzierende Substanzen (Vitamin C) im speichel.** Reducing substances (Vitamin C) in saliva. Paradentium. 6:155. 1938.

The author has gathered, from various sources, data on the content of Vitamin C (and associated reducing substances) in the saliva of normal and paradentotic individuals; he reviews the evidence and evaluates it. There is also data on the relationship between infection of the tonsils, and tonsillectomy, with the Vitamin C content of saliva. There must be further investigation of the possibility of treating inflammatory and infectious conditions in the mouth through the presence of saliva with a high Vitamin C content.

The method of determining the Vitamin C content of the body in saliva has a double value:

1. The relative constancy of the Vitamin C in saliva allows better insight into the condition of its metabolism than its determination in urine.

2. It is especially well adapted for the dentist, since an exact determination of Vitamin C is practical only in the clinic; and also because patients consider the dentist to be a doctor of the mouth, and so understand a saliva determination better than a urine determination.

—*M. B.*

87—Bodecker, Charles F., D.D.S., and Lester Cahn, D.D.S., Dental School, Columbia University, New York City. **Effects of daily use of flavored sodium perborate as a dentifrice for six months.** Abstr. 40. *J. D. Res.* 17:309. Aug., 1938.

Purpose of investigation to determine whether prolonged use of flavored sodium perborate causes chemical burns, "hairy tongue," or edematous conditions of oral mucosa. One hundred students used sodium perborate as a dentifrice for 6 months. All mouths photographed in colors in order to have permanent evidence of any pathological changes, also gingival biopsies of 20 and blood examinations of 37 students were made. Four students developed lesions suggestive of tooth brush trauma which did not reappear when use of sodium perborate was resumed. No pathological conditions were noted which could be defined as chemical burns of oral mucosa, "hairy tongue," or edema of mucosa. Flavored sodium perborate was not harmful to oral mucosa of this experimental group when used as dentifrice twice a day for an extended period. (Published in *J. D. Res.* 17:161, 1938.)

—*Copy.*

88—Brening, Robert H., D.D.S., and Glenn F. Sulser, Dental School, Northwestern University, Chicago, Ill.: **Determination of halitosis by means of osmoscope and cryoscopic method.** Abstr. 51. *J. D. Res.*, 17:314. Aug., 1938.

Following preliminary experiment, it was found that breath samples could be collected by "freezing out" process, using liquid nitrogen as freezing agent. Patient breathes through apparatus containing liquid nitrogen (—210°C.) for given time—15 minutes. At this temperature breath constituents are frozen out in collecting tube. Sample is brought to 37.5°C. in water bath and tested for odor by osmoscope. Osmoscope readings are termed pO values and range from 0 to 6, higher number indicating more intense odor. Semi-quantitative tests are run on condensate for indole, aldehydes, furfural, sulfur and ammonia. Chemical tests are correlated to some degree with clinical data, as nose and throat conditions, pyorrhea, caries susceptibility, etc. Results show aldehydes, particularly furfural, together with high ammonia content are found in tobacco smoke samples. High pO values are often associated with pyorrhea, while presence of caries apparently is not decisive factor in odor production. Odor intensity increases on average as age increases. Further work in progress.

—*Copy.*

89—Burket, Lester W., B.S., D.D.S., M.D.: . . . . **Accuracy of clinical and roentgenologic diagnosis of dental caries as determined by microscopic studies.** Abstr. 22. *J. D. Res.* 17:301. Aug., 1938.

Comparative gross, microscopic and roentgenologic examinations for caries made on 460 teeth. Caries more often detected by careful clinical examination than by use of roentgenograms. Roentgen ray was a

greater aid in determining interproximal than occlusal caries. Both clinical and roentgenologic examinations failed in diagnosis of 24 per cent of cavities demonstrated in microscopic preparations.

—*Copy.*

90—Cushman, F. H., D.M.D., and J. W. Etherington, D.M.D.: **Diet of adolescents.** Abstr. 14. *J. D. Res.* **17**:298. Aug., 1938.

Qualitative and quantitative analyses of diets of 67 lower-middle class patients, ages 13-19 years, were made. This age group was studied because it is characterized by rapid physical growth, high energy expenditure and high incidence of caries. It was thought that it might afford opportunity for observations of diets on the borderline of deficiencies. Outstanding were the following observations: (1) Low caloric intake (Av. 1735 calories), apparently not an economic phenomenon. (2) Good distribution of proteins, fats and carbohydrates (Av. proteins, 15.2 per cent; fats, 38.7 per cent; carbohydrates, 45.1 per cent). Note that these are not high carbohydrate diets. (3) Low but well-proportioned calcium and phosphorus intakes (Av. calcium, 0.80 grams; phosphorus, 1.12 grams). Deficiency due both to quantity and quality of foods. (4) Relatively adequate intake of iron (Av. 0.014 grams). (5) Borderline intake of vitamin C, definite and general deficiency of vitamin D. (6) Diets very generally basic in end-reaction. (7) Diets almost without exception of sticky consistency and low detergent value.

—*Copy.*

91—Dalldorf, Gilbert, M. D.: **Pathology of vitamin C deficiency.** *J. A. M. A.* **111**(15):1376. Oct. 8, 1938.

Primary effects of Vitamin C deficiency occur in intercellular structures of certain mesenchymal derivatives, for example loose connective tissue. Author finds dentin resorbed and porotic, and cementum and pulp pathologic, in scurvy. Gingival lesions are most marked about broken down teeth; gums are soft and swollen, often excessively. Rarefaction of alveolar bone supervenes causing loosening of the teeth. First symptom is hyperaemia of papilla, then disintegration of epithelium and infection with the usual sequelae. Mouth lesions are remarkably constant and among earliest symptoms.

—*C. R.*

92—Davidoff, S. M.: **Die azidotische bzw. alkalotische Verschiebung des Stoffwechsels und ihr Einfluss auf das Paradentium im Tierexperiment.** Acidotic or alkalotic condition of metabolism and its influence on the paradentium in experiments on animals. *Paradentium.* **2**:47. 1938.

In an attempt to study the conception of the acidotic or alkalotic origin of paradentosis, the author tried, by giving NH_4Cl and $NaHCO_3$ to herbivorous animals, to increase or reduce the alkaline reserve; thereby, he attempted to attain an acidotic or alkalotic condition of metabolism, in order to demonstrate its validity.

The questions involved were: whether and how far it is possible, by exclusive supply of acid or alkali, to obtain a general acidity or alkalinity of the organism; whether and how far it is possible by such a shift in metabolism to produce or ascertain alterations in the paradentium; and, which of these two displacements of metabolism should be considered preponderant with regard to its influence on the paradentium.

Results: the efficiency of the mechanisms of regulation of the animal organism is sufficient, normally, for isohydrism to be maintained, in spite of an exclusive supply of acid or alkali; no general acidification or alkalinization of the organism can be obtained by such means. Even by altering the conditions and obtaining compensated acidosis or alkalosis, within a year it was impossible to find clinically, or by X-rays, or histologically, any alteration of the paradentium.

—*M. B.*

93—Fishbein, Morris, M. D.: **Vitamins.** *J. A. M. A.* **110**(8):577. Feb. 19, 1938.

Introducing and commenting on new series of articles on Vitamins sponsored by the Council on Pharmacy and Chemistry and the Council on Foods, Fishbein quotes from *New and Non-official Remedies for 1938* the full statement as to claims allowable for vitamins in preventive medicine and therapeutics. He states that this represents a summary of present knowledge on the subject and he gives it in full for the benefit of those "who wish to get their vitamin knowledge in tabloid form." Of Vitamin C with relation to dentistry it is said (in this summary), that caries, pyorrhea,

certain gum infections, undernourishment and infection, alone are not in themselves indications of Vitamin C deficiency. Of Vitamin D: There is clinical evidence that Vitamin D plays important role in tooth formation and maintenance of normal tooth structures, but no warrant that adequate D will insure such conditions. It has, however, a favorable effect on calcium and phosphorus metabolism.

The series of articles referred to by Fishbein runs consecutively through all 1938 issues of the Journal of American Medical Association, and the perusal of many of them in their entirety is recommended. We quote from a few: C. G. King, Ph. D., in article on "Physiology of Vitamin C," *J. A. M. A.* 111(12):1099. 1938, says, "The most clearly established functional role of Vitamin C in animal tissues is its relationship to the physical state of the 'intercellular material,' as described by Wolbach and his associates. The relationship of Vitamin C to calcium metabolism is intimately associated with this phenomenon. Both roles are clearly of major importance in relation to growth and repair of bones and teeth, and it is evident that other tissues, such as cartilage and white fibrous tissue, are markedly affected in a similar manner. The chemical mechanism through which the vitamin brings about this control of metabolism is still unknown." Edwards A. Park, M. D., in giving "Uses of Vitamin D preparations" in *J. A. M. A.* 111(13):1186, 1938, says that, "It is certain that rickets causes enamel hypoplasia. This condition can be prevented by the prevention of rickets. Evidence is accumulating that administration of Vitamin D during childhood, particularly in the early years, reduces the incidence of dental caries. The possible influence of Vitamin D in the protection of the teeth from hypoplastic deformities and caries is a sufficient reason for the continuation of the Vitamin D therapy throughout child life." Ethel M. Luce-Clausen writing on clinical aspects of ultra-violet therapy quotes Council on Dental Therapeutics to the effect that claims for efficacy of ultra-violet radiation in treatment of oral disease have not been substantiated. In their article on "Human Requirements of Vitamin D" in *J. A. M. A.* 111(8):7067. 1938, P. C. Jeans, M. D., and Genevieve Sterns, Ph. D., give a comprehensive survey of experiments with Vitamin D in relation to tooth structure and dental caries. See also abstracts in this issue of the *Journal of Periodontology*, same section. (Other Researches.) Bessey & Wolbach on Vitamin A Physiology and pathology. Abstract No. 84, Dalldorf on Pathology of Vitamin C Deficiency, Abstract No. 91, Abt and Farmer on Vitamin C Pharmacology and Therapeutics, Abstract No. 83.

—*C. R.*

94—Glock, Gertrude E. and Margaret M. Murray: **Chemical investigation of salivary calculus.** *J. D. Res.* **17**:257. Aug., 1938.

A report of the results of chemical analyses of salivary calculus supplemented by X-ray crystallographic and spectrographic analysis for trace elements, including a brief review of the work of others, and current ideas on the subject.

Other investigators generally agree that salivary calculus is mostly inorganic, mainly calcium phosphate containing also a certain amount of protein. The object of this investigation was to see if there is "any constancy of calculus from different teeth by analysis of single tooth samples" and "to make a careful quantitative analysis by the methods which have been previously applied in this laboratory to enamel and dentin, of pooled samples of calculus from numerous teeth." An analytic comparison of the results is made with that of other researchers, and suggests to the authors that the formation of salivary calculus is not "a straightforward precipitation" but as suggested by Naeslund "a deposit due to bacterial or other microbic action in the stroma of the vegetation of microörganisms."

The summary of the research shows that salivary calculus is composed 82.9 per cent of inorganic material of which 79.7 per cent is calcium and magnesium phosphates and 3.2 per cent calcium carbonate. Protein was found to compose 8.34 per cent consisting of keratin, mucin, and nucleoprotein. Fat formed 2.7 per cent. Small amounts of Cu, Ag, Na, Sn, and traces of Zn, Al, Ba, Sr, and possibly Cr were revealed by spectrum analysis.

—*G. R. S.*

95—Guillermin, P., Held, A. J., and Held, H. R.: **Le pouvoir réducteur de la salive.** The reducing power of saliva. *Schw. Mschr. f. Zahnheilk.* **3**:280-284. 1938.

The authors cite the work of Don Zimmet and Dubois-Ferriere on Vitamin C in the saliva of normal people and paradentosis patients; their conclusions were that there seemed a definite relation between the rate of Vitamin C in the saliva of paradentosis patients, and this rate was about 50% less than the normal.

In the experiments by the authors themselves, they used the reducing power of saliva on the reagent 2.6 dichlorophenol-indophenol, instead of the Vitamin C content. They found the reducing value of the saliva of normals varies considerably; and the values for paradentosis patients were essentially the same as for normals. They also noted that a large dosage of Vitamin C could not change the reducing power of saliva. (See Abstracts 99 and 101, same section.)

—*M. B.*

96—Haber, Gustav G., M. D., German Research Community: **Influence of bread nutrition in Germany and Switzerland upon development of caries, calculus, and film, due to a certain method of feeding.** Abstr. 50. *J. D. Res.* **17**:313-14. Aug., 1938.

Group of 40 children, age 4 to 12 years observed from 27 to 46 months under same living and food conditions except as described. They were divided into 2 parts of 20 each. To one was given soft, 80 to 83 per cent ordinary rye bread, baked at usual high temperature in loaf form with hard crusts and soft centers. To second group was supplied 100 per cent rye bread in form of flat cakes, *Knaekebread*, grain ground by special process and bread baked at low temperature in form of flat cakes. Caries of deciduous teeth developed twice as quickly in soft bread group compared with hard bread group; there was 1½ to 3 times more caries in soft bread group than in hard bread one. After 2 years of this experiment, average chewing strength of hard bread group was 22 per cent higher than that of soft bread unit. Knaekebread children had a more copious salivary flow with increased alkalinity and greater increases in body height and weight than those in soft bread group.

—*Copy.*

97—Labbe, G.: **Contribution à l'étude de la phosphatase dans l'os sain et dans l'os atteint de paradentose.** Contribution to the study of phosphatase in sound bone and in bone attacked by paradentosis. *Schw. Mschr. f. Zahn.* **3**:307. 1938. (Originally appeared in *Thése de Santiago du Chili.* 1935.)

Phosphatase is an enzyme in bone with the specific function of dividing organic phosphates in two and transforming them into inorganic phosphates, which, combined with calcium, are precipitated as calcium phosphate in osteogenetic zones where the ferment is formed.

Phosphatase hydrolyzes equally well all phosphoric ethers (pyrophosphate, glycophosphate, etc.), and is extremely important in calcification and pathological bone formation. In paradentotic bone, there is invariably an increase of ferment from two to five times the normal. One might be led to think this increase is a cause of bone resorption; there has also been established the presence of a ferment produced by osteoclasts which destroys mineral salts of bone, and which may be the same as phosphatase.

It is probable that the increase of ferment is a defensive mechanism of the organism to retard the alveolar resorption while increasing the possibility for calcification of the affected parts.

—*M. B.*

98—Meyer, J., J. Golden, N. Steiner and H. Necheles: **Ptyalin content of saliva in old age.** *J. A. D. A.* **25**:504. Mar., 1938.

Twenty-seven men and women ranging between 69 and 100 years, with an average age of 81 years, formed the experimental group, and twelve people with an average age of 25 acted as controls. The ptyalin content of saliva was tested by the method described by Hawk and Bergeim. The ptyalin content of the basal salivary secretion of the older group contained 0.303 unit of ptyalin per cubic centimeter of saliva; that of the younger, 10.15 units. When salivary secretion was stimulated, 0.28 and 8.20, respectively, were found. In old people, the burden of starch digestion is thrown on the pancreas.—*Am. J. Physiol.*, 119:600, 1937.

VIRGIL D. CHEYNE

—*Copy.*

99—Pelzer, Rudolph H., D. D. S.: **Study of etiology of bleeding gums.** *J. Periodont.* **9**:25-38. Jan., 1938.

Report of a study in which fifty-five patients with gingival hemorrhage indicating a possible chronic vitamin C deficiency were given various capillary resistance tests. The results of the research suggest that diminished capillary strength in what appear to be otherwise healthy individuals may indicate a vitamin C undernutrition.

A satisfactory digest of this report is published in *The 1938 Year Book of Dentistry*, pp. 58-59.

—*G. R. S.*

100—Platonoff, M.: **Les neurotoxines dans la pathogenie de la pyorrhée alveolaire.** Neurotoxines in pathology of pyorrhea alveolaris. *Rev. Belge de Stom.* **3**: 1938. (Originally in *Stomatologie.* **3**: 1937).

The role of changes of trigeminal nerve in the pathology of the alveolar process seems certain, in many cases. It concerns a trophic symptom, of which tabes is the most complete type. Platonoff carried out studies on what could cause nutritive disorders of the nerve. For this, he used rabbits; he injected, into the region of the trigeminal, cerebrotoxins, an emulsion of the heterogeneous nervous tissue (from porpoises), and the serum of a horse. These injections, in the course of the first series of the experiments, have caused a certain degree of alveolar disturbance, attributable to nutritive disorders of the corresponding nerve.

—*M. B.*

101—Price, Weston A., D. D. S., M. S.: **Facial and dental arch form of ancient Peruvians.** Abstr. 96. *J. D. Res.* **17**:331. Aug., 1938.

Cleveland, Ohio. Influence of Humboldt current and its abundance of sea foods on ancient cultures as expressed in skeletal material studied in Peru. Ancient method of preparation and burial in dry desert sand of coastal area has preserved skeletons in excellent physical condition. Examination of over 1200 skulls to note facial form, size and shape of dental arches did not disclose a single arch with even moderate malformations such as is typical of large percentage of individuals in our modern civilizations. Diet of these cultures is indicated by foods that were interred with bodies, equipment used to secure foods and reproduction of food in pottery forms. Their foods included various animal life from the sea and variety of cereals, root plants, greens and vegetables raised by irrigation in river valleys.

—*Copy.*

102—Schultzer, P.: **Saturation of a scurvy patient with small doses of ascorbic acid; consideration of the daily human requirement.** *J. A. D. A.* **25**:322. 1938. (*Abstr.*)

When massive doses (300-600 mg.) of vitamin C are given daily, clinical symptoms disappear and capillary resistance returns to normal in a few days, but saturation is reached only after several weeks. The same results were obtained with small doses (40 mg.) daily. The total quantity of vitamin C necessary to reach saturation depends on the size of the daily dose given. From the figures obtained, it was found that the amount of the vitamin required for saturation is smaller than commonly supposed, 40 mg. daily being curative.—*Biochem. J.*, 31:1934, 1937.

MARTIN DEAKINS.
—*Copy.*

103—Wachholder, K., Holz, A., and Briem, H. J.: **Paradentose und Vitamin C.** Paradentosis and Vitamin C. *Schw. Mschr. f. Zahn.* **9**:963. 1938. (Originally appeared in *D. Z. W.* **41**:625. 1938.)

The disputable studies of Zimmet and Dubois-Ferriere on Vitamin C content in the saliva, which gave as the value for paradentosis one-half the normal, instigated the authors to verify it with better methods; they used oxidation protection (sulfosalicylic acid and glutathione) and the specific methylene blue in place of dichlorophenol-indophenol. The content became the reversible oxidized form of Vitamin C, the so-called dehydroascorbic acid, by which the total content of Vitamin C should result. The total content of ascorbic acid in the saliva showed fluctuation in healthy individuals between 0.36-1.54 mg. %, and in very close dependence on the vitamin saturation of the whole body, so that the Vitamin C pattern in saliva in paradentosis need not be unconditionally lower.

In contrast to the evidence of Abt, the authors found the ascorbic acid content in blood plasma of less than 0.5-0.75 mg. % as the normal expression of Vitamin C saturation, which is not faulty. On the basis of good therapeutic experience, with an abun-

dant supply of Vitamin C, where a definite lack of vitamins could not be determined, the authors believe that ascorbic acid with a supplementary substance may be a healing remedy; where the presence of hypovitaminosis of Vitamin C of the paradental membranes is not yet fixed, the use of ascorbic acid releases an increased amount of Vitamin C. The use of Vitamin C in treatment of paradentosis is an autoactive therapy with precise cellular methods. Practical application of such treatment demands that a surplus amount of vitamins must be introduced.

—*M. B.*

104—Weisberger, David, M. D., D. M. D.: . . . . **Ascorbic blood levels in dental patients.** Abstr. 39 *J. D. Res.*, 17:308. Aug., 1938.

Ascorbutic acid blood levels studied in 65 patients; feeding experiments were carried out on 15 of these. It is concluded that (1) partial vitamin C deficiency causes some degree of parodontal disease, and (2) replenishment of vitamin C is followed by normal ascorbutic blood levels and clinical improvement in the tissues affected. (Published in *J. D. Res.* 17:101, 1938.)

—*Copy.*

105—Zimmet, D., and Held, H. R.: **Gingivites, Vitamin C, et pouvoir réducteur de la salive.** Gingivitis, Vitamin C, and reducing power of saliva. *Schw. Mschr. f. Zahnheilk.* 3:284-286. 1938.

The authors mention the previous experiments (see Abstr. 95, p. 99 and 103, p. 100) and mention that the reason for the divergence of the results from those of their predecessors is probably due to factors not yet understood.

The objects of their own experiments were to see:

1. If the reducing power of mixed saliva had a characteristic value in gingival inflammations.
2. If there were any changes during, and after, treatment.

They found it impossible to establish a characteristic value for gingivitic saliva because of the greatly varying values of the samples; and, also, that the presence of deposits in the saliva (according to the method of obtaining them) seemed to greatly influence its reducing power.

They tried to treat gingivitis by topical application of Vitamin C in the form of a mouth wash. They point out the success of ascorbic acid solution in treating chronic gingivitis. It is probable that topical applications of Vitamin C in treatment of gingivitis leads to a more rapid and permanent cure.

—*M. B.*

(d) Clinical Etiology

(Continued from 9(2):102. July, 1938)

385—Aiguier, James E., Ph. G., D. D. S.: **Preventive measures in periodontology.** *J. A. D. A. & D. Cosmos*, 25:13-20. Jan., 1938.

In order to apply preventive measures it is necessary to understand fully the etiologic factors which either predispose or directly cause the diseases of the supporting tissues of the teeth.

The author divides these factors into two groups: A. Predisposing factors, such as, deficiency diseases, metabolic diseases, venereal diseases, circulatory disturbances, blood dyscrasias, pregnancy, heredity, allergy, and endocrine imbalance.

B. Exciting causes, *viz.*, deposits on the teeth, bacteria, chemical agents, mal-position of the teeth, caries, occlusal trauma, faulty dental work, injury from use of tooth pick and dental floss by the patient, injurious effects of irradiation when treating malignancies in the mouth.

Each one of these etiologic factors is discussed separately and a chart is included which presents a diet of proper food for protecting the teeth and their supporting tissues.

In addition a chart giving detailed instruction in the use of the tooth brush is shown. Treatment methods are described.

—*G. R. S.*

386—Belding, P. H., D. D. S., and L. J. Belding, M. D.: **Gingival infection and resistance.** *J. A. D. A. & D. Cosmos*, 25:529-35. April, 1938.

Infection implies bacterial activity. "Infectious disease" (as defined by Hans Zinsser in his work *Infection and Resistance*), "biologically considered, is the reaction which takes place between invading microörganisms and their products on the one hand and the cells and fluids of the animal's body on the other."

We have here two exceedingly variable factors, the resistance of the cells of the body and the quantity and virulence of the microörganisms.

The authors quote Noyes regarding the

importance of knowledge of the cell, ". . . In terms of the cell theory the functions of the body are but the manifest expression of the activities of thousands or millions of more or less independent but correlated centers of activity. If these centers or cells perform their functions correctly, the functions of the body are normal, but if they fail to perform their office, or work abnormally, the functions of the body are perverted. In the last analysis, then, all physiology is cell physiology, all pathology, cell pathology . . . "

The article is made up largely of a discussion of the importance of the relative resistance of the tissues as a factor in infectious diseases of the gingivae and emphasizing bacteria as the chief etiologic factor. The conclusion is reached that "the majority of cases of persistent gingivitis are the expression of a specific bacterial disease." Debate is futile regarding the relative importance of predisposing factors and bacterial activity in producing and maintaining chronic gingival disease since both are essential.

—*G. R. S.*

387—Boyle, Paul E., D. M. D.: **Dietary deficiencies as a factor in the etiology of diffuse alveolar atrophy.** *J. A. D. A. & D. Cosmos,* **29**:1436-46. Sept., 1938.

Periodontal disease is of two types, one a *local* and the other a *systemic* process. The author uses diabetes mellitus to illustrate the relation between localized disease processes and systemic disorders. This disease is often accompanied by boils which are caused by the constant presence of staphylococci on the skin which may, of course, occur in the non-diabetic. The control of these abscesses in the diabetic is difficult until the carbohydrate metabolism is restored to normal when the normal local metabolism of the skin follows. Then the usual treatment of these abscesses is applied with success.

Disease is always a complex process and even though health is sometimes restored by correcting one etiologic factor it is a mistake to assume that the etiology is necessarily a simple one. Confusion arises when the concept of etiology is too narrow. It is impossible to draw a sharp line between local and systemic disease processes. The author suggests, however, that "a valid distinction may be made between processes initiated locally and processes which are a local manifestation of systemic disorders." He uses Gottlieb's conception of *Schmutzpyorrhea* to describe the local process and that of Box explained under the term rarefying pericementitis fibrosa to identify the systemic process.

It is questionable whether deficiency of Vitamin A has any influence in gingival infection and in this the author's results disputes those of Melanby. Vitamin D deficiency is associated with failure of bone and tooth matrices to calcify normally and this may predispose to periodontal disease through malformations of the jaws and malpositions of the teeth.

"Vitamin-C deficiency is the only nutritional deficiency which, in our experience, produces the characteristic features of the systemic type of pyorrhea in experimental animals, Vitamin C is essential to maintenance of health of the oral tissues." It is not a panacea for all dental disorders.

—*G. R. S.*

388—Breuer, K.: **Die intern-ursache und intern-behandlung der erkrankungen des paradentiums.** Internal causes and treatment of the diseases of the paradentium. *Dtsch. Zahn. Wrft.* **44**:1037. 1938.

There are no internal diseases, no constitutional or acquired malfunctions of internal organs in which there will not be paradental changes. The search is still going on to find the cause which, alone and in every case, brings about paradentosis. Without internal disorders—even in the presence of several exogenous factors or of severe functional disturbances—paradentosis cannot develop. In cases of disturbances of the basal metabolism, of sugar-calcium-cholesterol content of the blood, of Vitamin-C metabolism, the paradentium reacts with inflammatory changes.

Research has shown that internal disturbances appear in all forms of paradentosis. Those cases of paradentosis with inflammatory prevalence (which has led to inflammatory changes in the paradentium) should be studied especially; it is in these cases that there is a greater possibility of determining the primary disturbance. In cases with dystrophic prevalence, we are usually dealing with the clinical symptoms of an abnormal functional condition, where inflammatory changes are found quite generally or to a very limited extent.

Since paradentosis is not caused by internal disorders alone, it cannot be cured by

internal therapy; functional disturbances must also be corrected. It should include local dental treatment (of pockets, granulation tissue, etc.), prescription of a vegetable diet, and administration of Vitamin C.

—*M. B.*

389—Brinch, O.: **Über die bedeutung der C-hypovitaminose als ätiologischen faktors für die paradentose.** Importance of C-hypovitaminosis in the etiological factors of paradentosis. *Paradentium.* **2**:33. 1938.

Since paradentosis is not a uniform disease, several conditions being likely to produce it, there should be an investigation of several types of diseases which can result in paradentosis. Most types of paradentosis are attended by inflammation of the gingivae, and since chronic inflammation can lead to paradentosis, prophylaxis against such inflammation is prophylaxis against paradentosis. Chronic inflammation of the gingivae can be caused by exogenous factors (tartar, projecting fillings, etc.) or endogenous factors (diseases of the blood, poisoning, and hypovitaminoses).

There is the possibility that a certain number of chronic gingivitis cases are caused by Vitamin C deficiency; thus, a certain portion of the cases of paradentosis may be due to primary Vitamin C deficiency. It is known that C-hypovitaminosis may result in hemorrhage or inflammation of the gingivae, which should be the first clinical symptom noted of total deficiency of Vitamin C.

—*M. B.*

390—Ehlert, M.: **Wesen und behandlung der paradentose.** The existence and treatment of paradentosis. *Dtsch. Zahn. Wchschrft.* **32**:762. 1938.

A disease corresponding in symptoms with present-day paradentosis was treated by Fauchard as early as 1746, and was recognized then as a type of scurvy. Even up to the present day, the etiology of paradentosis is disputed, but it is more and more coming to be recognized as a local symptom of a general abnormal organic condition, especially due to metabolic disturbances; the fact that bacteria play a role was established by Miller. Paradentosis is thus an infection, the basis for which lies in metabolic disturbances of the whole organism; a pre-disposition for it exists in diabetes, gout (arthritis), all infectious diseases, and nervous disorders such as neurasthenia and hysteria.

Knowledge of this fact is of the utmost importance for therapy, so that the dentist will give his attention not to local symptoms alone but also to internal etiological factors. Most cases show a metabolic disturbance with an excess of uric acid; a mixture of various sodium salts is a specific means of alkalizing the excess of uric acid. Through a building up of an alkaline reserve in the blood and removal of acidosis in the metabolism, paradentosis is attacked at its root. If this therapy does not always result in an ideal prognosis, because the etiology of paradentosis is still indefinite, this method should not be entirely overlooked since it may be a valuable and convenient aid in the treatment of paradentosis.

—*M. B.*

391—Häupl, K.: **Die funktions-kieferorthopädie im dienste der vorbeugung paradentaler erkrankungen.** Orthopedics of the jaw in the prevention of paradental diseases. *Paradentium.* **9**:218. 1938.

Jaw orthopedics serve only as one preventative measure in the fight against paradental diseases. A whole series of factors, which come into play in the etiology of these diseases are not in the least influenced by jaw orthopedics; but whatever can be accomplished here should be attempted. By the proper control of orthopedics of the jaw, it is possible to handle a large portion of the children, and even adults, without exacting too much sacrifice on the part of the patient. The apparatus is worn only at night; control of the apparatus is necessary, generally, only 4-6 times a year, often less, and requires little time. In jaw orthopedics, there exists a means to provide, through proper measures for fighting on a wide scale the defects in tooth position and occlusion, and thereby for preventing paradental diseases that result from such defects.

—*M. B.*

392—Hilming, F.: **Klinische Untersuchungen über paradentose bei diabetes mellitus.** Clinical studies of paradentosis in diabetes mellitus. *Paradentium.* **10**:227. 1938.

Studies made on 84 diabetics, (excluding 15 edentulous cases) showed that 61 of the remaining 65 had paradental disease. In spite of the large number of cases with calculus, the author shows that diabetics have no greater disposition to calculus than other

people, and that calculus is of no greater etiologic importance in diabetic paradentosis than in every inflammatory paradentosis.

In the bone, inflammatory diabetic paradentosis appears to begin as a horizontal atrophy, and not until it has reached certain individual limits does the paradentium become sufficiently weakened to yield to existing traumatic occlusion, which subsequently causes vertical atrophy. In cases of non-traumatic occlusion, no vertical atrophy was found.

Among patients with previous acidosis who had diabetes before the appearance of paradentosis, milk had formed a part of the diet in every case of less severe forms, while 10 of 20 cases of severe degree had never received milk in their diet.

As a result of these studies, it seems fair to presume that diabetes predisposes to paradentosis, and that diabetic paradentosis is almost always inflammatory. The possibility of insufficient calcium content in the diet as a contributory cause in diabetics, with recurrent and protracted attacks of acidosis, must also be taken into account. Further studies will be made to clear up these problems.

—*M. B.*

393—Jaccard, R.: **Géographie des paradentoses.** Geography of paradental diseases. *Schw. Mschr. f. Zahn.* **9**:901-917. 1938.

In examining the causes of disease (endogenic and exogenic) you must consider them not only from a racial and constitutional viewpoint, but also from the point of view of the influences of environment: climate, altitude, particular parasites, etc.

The Society of Geographic Pathology, first called by Prof. Askanazy and Aschoff in 1931 at Geneva, and since then meeting every three years, usually selects one particular problem each session; but at the last meeting Prof. Askanazy accepted the proposition of treating some accessory questions along with the one main problem. Since paradental diseases may be such a question at a future meeting, the author set himself to prepare for it by clinical observation.

The question of terminology first arose, but it was decided to adopt that of the International ARPA. For gathering data on the symptoms, several colleagues gave suggested charts for observation; but that proposed by A. J. Held seemed the best. Suggestions of U. Vauthier were interesting and helpful: we must examine thousands, not merely hundreds, of cases; inquiries should be made in public schools, dental clinics in schools, schools of recruits (in the army), and also private schools.

This suggestion gave the author the idea to start an inquiry in schools for recruits. He wrote to Col. Vollenweider, doctor-in-chief of the army, telling him of the studies and work of the International ARPA at Copenhagen in Aug., 1937, and of his intention to study the geography of paradentosis. He asked for coöperation in his studies: examination of each new recruit by a military dentist, filling out a special chart of his observations; establishment of a one-day course for army medical dentists to tell them what is required; titration of vitamin C at the time of medical visit of each recruit. Col. Vollenweider was interested and promised his coöperation. Also, a young colleague began a parallel inquiry in the school for recruits at Lausanne.

In addition to this, inquiries must be made at schools, boarding schools for girls, clinics, and hospitals. The author finally asks all colleagues to study the problem, and send their results and suggestions to him; coöperation of all volunteers in this work is asked.

—*M. B.*

394—Jung, M. J.: **Les mécanismes de la résorption osseuse.** The mechanisms of bone resorption. *Rév. Odontolog.* **4**:308-309. 1938. (Originally appeared in *Rév. de Chirurgie.* 7. July, 1937.)

Bone resorption is a fundamental physiological phenomenon of the life of bone tissue. By the study of many types of resorption, the author deduces three factors:

1. Vaso-motor factor.
2. Endocrine factor.
3. Chemical factor in the form of acidosis.

Among these factors, the added one of circulation plays an essential role. The results of bone resorption are: alveolar-dental pyorrhea, dental caries, pains, calcareous metastases, and renal lithiasis. But the absence of resorption has also a clinical interpretation; in this connection, parathyroid tetanus is a syndrome of lack of use of calcium reserves of the organism.

—*M. B.*

395—Kramer: **Beiträge zur Frage des C-Vitamingehaltes der Kartoffel aus Grossküchen mit besonderer Berücksichtigung der Bedeutung der C-Hypovitaminose als ätiologischer Faktor für die Paradentose.** Contribution to the question of the vitamin C content of the potato from the kitchen, with special consideration of the meaning of vitamin C deficiency as an etiological factor of paradentosis. *Paradentium.* **12**:286. 1938. (Originally in *Der Dtsche. Militararzt.* **11**. 1938.)

Many people, because of present cooking methods, especially in a large kitchen, can not fill their minimum vitamin C need. The widespread hypovitaminosis, which is not yet well-known, can become a cause of paradentosis in people who have constitutionally inferior dental organs. The vitamin C content of uncooked food, when cooked, yields an entirely different value; only through the study of food under the conditions in which they are eaten can you obtain correct values. From April to June, our food is poor in vitamin C, which results in ill-effects; this can only be remedied through other cooking methods. Potatoes must definitely be cooked in the jackets, this is not for the convenience of the cook, but out of health considerations. If cooked potatoes are kept warm longer, their vitamin C content becomes worthless.

—*M. B.*

396—Leonard, Harold J., D. D. S., B. A.: **Dietary factors in periodontal disturbances.** *J. A. D. A.* **25**:102-14. Jan., 1938.

The pathology of gingivitis and periodontoclasia is described and several most common local etiologic factors of these abnormal conditions are discussed.

Among the systemic conditions which predispose to bacterial invasion are certain dietary deficiencies. The author does not, however, limit his discussion to dietary deficiencies, but considers dietary etiologic factors from a much broader viewpoint. There are seven ways in which these may influence the health of the periodontal structures:

1. The physical consistency of the food as to whether it requires prolonged mastication thereby stimulating the gingival and periodontal structures and mechanically cleansing the teeth.
2. The consistency of the food as to whether it leaves a residue of adherent material providing a pabulum for bacterial increase.
3. Certain foods for some persons lead to heavy deposits on the teeth.
4. Poisons, including food poisons, may lower resistance of the body, including the gingivae, to infection.
5. The gingivae may be allergic to certain foods.
6. Food deficiencies may lower tissue resistance of the body including the gingivae.
7. Food deficiencies may lead to changes in the metabolism of connective tissue and bone and may be evidenced in a weakening or resorption of alveolar bone.

The above seven dietary factors are thoroughly reviewed in a practical way, especially the last two, leaving the reader well posted as to the extent of this part of dietary research up to the time the paper was presented.

The author advises dietic control of periodontal disturbances by vigorous, slow, and efficient mastication of resistant food; the omission of starchy and sweet foods at the end of a meal and between meals, if of the consistency likely to leave a residue on the teeth; the ample fortification of the diet with vitamins A, B, C, D, either through foods rich in these factors or by means of vitamin concentrates; optimal amounts of calcium and phosphate (milk, cheese, eggs, and meat, or calcium phosphate preparations).

—*G. R. S.*

397—Morgenroth, K.: **Zahnfleischerkrankungen bei C-Hypovitaminosen.** Diseases of the gums due to deficiency of vitamin C. *D. Z. W.* **37**: Sept. 16, 1938.

It is extremely important to find the relationship between prescorbutic symptoms of gingivitis and stomatitis and vitamin C deficiency. Kramer showed that treatment of this disease with vitamin C is possible, so that some connection must exist. Wacholder showed that vitamin C dosage helps paradentitis marginalis progressiva.

For his experiments, the author used 110 children of the ages 6-15 years. One-half of them were given daily 100 mg. of vitamin C in the form of two tablets of redoxon; the other half were used as a check. After six months, the following was found: when the check group were given 200 mg. vitamin C daily, they first showed a beginning of

saturation after more than six days, while the group that had been receiving the daily doses in the past six months showed an appreciable abundance of vitamin C after only one to two additional doses.

At the end of this six month period, 85 children were studied for the condition of the oral mucosa (gingivae), and occlusion. Of these, 41 children had had treatment with vitamin C, while 44 were of the check group. In the redoxon-fed group, 27 (68.3%) were free from gingivitis, and 10 (24.4%) had circumscribed gingivitis marginalis. In the other group, only 21 (47.7%) were free of gingivitis, while 15 (34%) showed circumscribed gingivitis marginalis.

Most interesting were the results of the study of the existence of extensive gingivitis marginalis. In the redoxon-fed group, only 3 (7.3%) showed this condition, while in the other group 8 (18.2%) had this condition.

It seems that vitamin C deficiency shows itself in changes in the gingival tissues before other symptoms appear. These changes at such an early age must have definite significance for the presence of paradentitis marginalis progressiva of older age.

—*M. B.*

398—Pedersen, P. O.: **Über den Einfluss des Tabaks auf die Schleimhäute der Mundhöhle bei den Südwestgrönlandern und Östgrönlandern.** The influence of tobacco on the oral mucosae in southwestern and eastern Greenlanders. *Z. Rund.* **37**:1558. 1938. (Originally in *Tandlaegebladet* **6**: 1938.)

The influence of smoking tobacco on the mouths of 1,073 patients born in southwest and east Greenland is interestingly reported. It begins with a description of the various forms of tobacco uses which were previously described by Nasen and Meldorf. Excessive use of tobacco produces numerous effects on the mouth. Leucoplakia oris was observed only in a few cases in men, not in women. Generally, chewing tobacco produced local areas of irritation. Especially significant is the fact that only 0.7% of west Greenlanders and 1.9% of east Greenlanders had clinically healthy gingiva, (among the men).

Paradentitis marginalis toxica, a toxic infectious paradentitis of the maxillary molars, is unusually prevalent, as well as tobacco stains. The usual pipe holes were also found in old men, who smoke porcelain pipes without stock and stem.

—*M. B.*

399—Prinz, H. and Schnay, K.: **Karies, Paradentose und Stellungs anomalien im Lichte der Ernahrungsforschung.** Caries, paradentosis and anomalies of tooth position in the light of studies on nutrition. *D. Z. W.* **24**:566. 1938.

Deduced from the authors' studies, the important causes of many paradental diseases are: vitamin deficiency, disturbance of mineral metabolism, and excess acidity of food. Added to these endogenous components are such local factors as calculary deposits and excessive strain on the teeth; the latter is brought about by improper tooth position, loss of teeth and poor articulation from a deficient dentition.

In the case of paradentosis, no specific causes can be found just as in caries, where every disturbance of the equilibrium of the organism can cause paradental disturbances. The effect of nutrition on the development of the dentition is recognized. Our knowledge is now finally leaving the old lines of thought and getting at the true causes. Closer coöperation between the general medical man and dentists should exist so that the fight against diseases of the teeth can be fought with modern medical-biological methods.

—*M. B.*

400—Rebel, Prof.: **Was versteht man unter Präparadentose?** What is understood under the term preparadentosis? *Z. Rundschau* **18**:790. 1938.

A morphological-anatomical preparadentosis occurs as often as morphologically pronounced precarcinosis or presarcomatosis. Predisposing conditions are:

Local: chronic gingivitis with or without tartar formation, catarrhal gingivitis before puberty, gingivitis ulcerosa scorbutica, abnormal strains.

General: constitutional preparedness from diabetes mellitus, arthritis, anomalies of metabolism, avitaminosis, vitamin C deficiency, endocrine disturbances (as hyperthyroidism). These last named disorders can also be found in people without paradentosis.

Other factors are: overstrain from loss of teeth and migratory changes of tooth position; underdevelopment of the jaw and its

musculature; further generally insufficient body development; faulty nutrition; lack of exercise, air, and sun. These are all factors which predispose to paradentosis.

We may presume that paradentosis was as well known as caries in former times, but that it first became general with progressive civilization. For this reason the conditions of civilization must be cited as factors favoring this condition.

—*M. B.*

401—Schmidt, Dr. H. J.: **Paradentitiserscheinungen oder Rauchergingivitis? Paradentitis or smoker's gingivitis?** *D. Z. W.* **13**: Mar. 31, 1938.

Under the heading of paradentitis is understood a general loosening and disintegration of the support of the tooth (paradentium) which holds it in the jaw; a brief discussion of symptoms and causes follows. Under gingivitis of smokers is understood marginal inflammatory changes, which in their course result in the atrophy of the paradentium, but it remains confined only to the gums and dental periosteum. A brief comparison of the clinical syndrome of these two diseases follows, by which they are seen to be not as dissimilar as was previously believed.

Smoking has an irritating effect on the oral mucosa through its ingredients, its temperature, and its absorption of water which has a drying effect. Another factor is the entrance of the stump, of the cigar or pipe especially, into the space between the teeth and into the oral cavity, so that the ingredients are actually tasted to some extent.

Therapy must be considered along three lines:

1. In very severe acute or chronic cases, smoking must be entirely forbidden; at least a holder filled with an absorbing agent should be used to minimize the effects. Filters in some cigarettes have only a slight value.
2. Another question is to reduce the nicotine content of tobacco; this is possible through the proper cultivation of tobacco plant and curing the leaves; but of course, tobacco firms cannot be made to worry about this, nor about the type of paper used in cigarettes.
3. Local therapy: strong massage and mouth washes. The over-sensitivity of smokers to cold prevents the prescription of Iodine-KCl paste even to people not sensitive to iodine.

—*M. B.*

402—Schobel, R.: **La paradentose et son traitement commun par le dentiste et le medecin.** Paradentosis and its common treatment by dentist and medical doctor. *Rev. de Stom,* **3**: 1939. (Originally in *Hippokrates.* **18**: 1938.)

Paradentosis must be considered as an expression of an alteration of the gingiva, supporting structure of the teeth, and maxillary process. To this are added disorders in the dentition in regard to functional unity, and finally general disorders. Most important are the internal disturbances and their relations to the dental apparatus, relations which have for a long time been recognized. The alveolo-dental articulation constitutes a point of less resistance, whose lesions are irreparable. Examination often discloses constitutional anomalies and metabolic disorders created by defective alimentation. Resorption of bones gives evidence particularly of a disorder of calcium metabolism.

In paradentosis, vitamins can have an unfavorable (excess vitamin D and A) or a favorable (vitamin C, in association with B and D) effect. Among the hormones, there is that of the parathyroids which is concerned with calcium metabolism. Great crises, such as puberty, pregnancy, and menopause, give rise, often, to paradentosis. Finally, when this disease exists, there is often vagotonus. Collaboration between the two practitioners of medicine and dentistry is therefore necessary for the treatment of this complex disease.

—*M. B.*

403—Weisberger, David, D. M. D., M. D., Arthur P. Young, D. D. S., and Fred W. Morse, Jr., M. D.: **Study of ascorbic acid blood levels in dental patients.** *J. D. Res.* **17**:101-5. April, 1938.

For a number of years a limited number of researchers and clinicians have claimed to observe an improvement in the gingivae following the administration of large quantities of orange juice, and suggested the change was due to its Vitamin C content. Boyle described, "in Vitamin C deficient guinea pigs, parodontal changes which are pathologically identical with a form of human parodontal disease."

More recently laboratory methods have been perfected for determining the Vitamin C content of the blood and synthetic Vitamin C has been isolated. This has aided clinical studies on Vitamin C in its relation to nutrition.

Feeding experiments were carried on with fifteen patients having both a Vitamin C deficiency and parodontal disease. Methods of blood study and feeding are described in detail, as well as the dental findings.

No clinical change was noted until approximately two weeks after the ingestion of the first gram of Vitamin C. There was "cessation of bleeding, diminished hyperemia, increasing firmness of tissue, and in a few cases tightening of the teeth," following the treatment.

The authors recognize the fact that in long-standing cases of parodontal disease there are other etiological factors even though there may be a partial Vitamin C deficiency, which may have caused chemical alterations in the tissues, and later structural lesions. The conclusion was reached that partial Vitamin C deficiency causes some degree of parodontal disease.

—*G. R. S.*

(e) Symptomatology and Diagnosis

(Continued from 9(2):122, July, 1938)

292—Baer, M.: **Pharyngitis und Vitamin C-Stoffwechsel.** Pharyngitis and vitamin C metabolism. *Z. Rund.* **33**: 1388. 1938. (Originally in *Schw. Mediz. Wchn.* **13**. 1938.)

Dr. Baer describes a case of a patient, who shortly before had been operated on for sinusitis, and who developed a severe pharyngitis with cardiac crisis. A study test with Redoxon showed a severe Vitamin C deficiency. In addition to this, there were established vitamin C deficiencies in other throat diseases, which were improved by administration of Redoxon.

—*M. B.*

293—Beltrami, G.: **Le déséquilibre alimentaire (Carence C) dans les troubles du metabolisme calcaire, ossification, et dentition en pathologie humaine and comparée.** Disturbance of alimentary equilibrium (vitamin C) in disorders of calcium metabolism, ossification, and dentition, in human and comparative pathologie. *L'Odontologie.* **12.** 1938. (Originally appeared in *Marseille Medical* **17.** June 15, 1938.)

In man, as in animals, dental anomalies are manifest symptoms of disorders in the general metabolism. The tooth constitutes for the biologist, paleontologist, histologist, and embryologist, a very important organ in its structure, formation, life and relations to general skeletal conditions. Examination of the teeth of animals has led the author to make a study of other bones of the skeleton, in an effort to find an etiologic factor common to dental disorders and those osseous disturbances heretofore known as hypertrophic osteopathy, whose nature and etiology are obscure.

Beltrami finds the theories on hypertrophic osseous formations (tubercular, infectious, and endocrine theories) are all true to some extent, but these factors are only secondary and depend on a common original factor, which is avitaminosis; or, according to more recent conceptions, disturbance of nutritional equilibrium. He believes that if a study were made of osseous diseases, one would find, in nutrition, the original cause of the disturbance of calcium metabolism—in the deficiency of calcium or phosphorous, in faulty deposition of these elements, or in disorder of conjugated protein material on which the function of absorption and fixation of osseous salts depend. In general, all these disorders are due to a long continued disturbance of alimentary equilibrium, with a predominance of a deficiency of vitamin C.

His experiments, which have been on captive and domestic animals, can, he believes, be applicable to humans. Many disorders, for which they are seeking microbic origin, may be manifestations of humoral disorders caused by the mode of life of civilized man.

He advocates that practitioners inquire into the nutritional regime, activity of the patient and his general mode of life, and of the vaccines to which he has been exposed. Nutrition seems to be the prime factor of life, according to evolution.

—*M. B.*

294—Bernard, H., Merklen, F. P., and Pequignot, H.: **Un cas de scorbut chez l'adulte. Guérison des hémorrhagies et amélioration des lésions gingivo-buccale par l'acide ascorbique. Evolution mortelle ultérieure.** A case of scurvy in an adult; treatment of hemorrhages and improvement of lesions with ascorbic acid; eventual death. *Rev. de Stomat.* **2.** 1939. (Originally in *Soc. Med. des Hopitaux de Paris.* **10.** 1938.)

The authors had the occasion to observe, in a man of 50, afflicted with sclerosis, a case of scurvy; the buccal and gingival lesions yielded rapidly to the administration of ascorbic acid, but did not progress to a state of cure. Instead, it developed into torpor and a coma, with the final death of the patient. The absence of the excretion of ascorbic acid in the urine, in spite of large and prolonged doses, is to be noted in this case as evidence of some associated abnormal conditions.

—*M. B.*

295—Bliss, S.: **Cause of sore mouth in nephritis,** in *J. Biol. Chem.* Nov. 1, 1937. From Abstr. in *J. A. M. A.* **110**(3):240. Jan. 15, 1938.

Bliss thinks that severe ulceration of cheeks and tongue often found in nephritic patients is due to the local irritant effect of ammonia which is formed by action of urease on the urea in saliva. He found urease in tartar from dogs' teeth and scrapings from these teeth promptly hydrolyzed urea solutions to ammonia. It was demonstrated that ammonia does actually damage soft tissue and the ulceration occurs where tissues lie against teeth with tartar and clears up when tartar is removed.

296—Bober, H.: **Paradentose und konstitutions-anthropology.** Paradentosis and constitutional-anthropology. *Paradentium.* **2**:40. 1938.

Constitutional anthropology explores endogenous and exogenous factors in functional activities of the organism in their relations, with regard to evolution and race (hereditary mass). It is a totality science, considering every individual phenomenon invariably as a part of the whole, the constitution.

Since paradentosis can be shown to be a stigma of biological-constitutional evidence, exploration of this problem is done by means of methods of constitutional anthropology in two directions:

1. With the resulting organ (paradentium) as the center;
2. With the hereditary structure as the center.

From psycho-physical stratification, there is inferred the necessity of looking for early forms of paradentosis, these being not only more amenable to therapy, but also presenting a purer picture with regard to causal connections.

—*M. B.*

297—Bugge, S.: **Über epulis und hypertrophische gingivitis besonders bei jugendlichen personen.** Epulis and hypertrophic gingivitis, especially in young people. *Z. Rund.* **34**:1426. 1938. (Originally in *Norske Tannlaegeforenings Tidende.* **1-2.** 1938.)

The following similarities for epulis (especially epulis fibrosa) and hypertrophic gingivitis are given:

1. Common localization in gingiva propria.
2. Same structure: definite arrangement of newly-formed connective tissue. In deepest central part is the most compact tissue, as in normal gingiva; going radially towards the periphery, the tissue becomes more like young granulation tissue.
3. Same cell forms found, of which the greater part are fibroblasts with sparse collagenous fibers and some inflammatory cells.
4. Both occur mostly in women.
5. There is a great increase in pregnancy.
6. Those forms of epulis and hypertrophic gingivitis which show the greatest conformity occur in young persons.
7. There is a tendency for relapse after surgical treatment.
8. Same influence of radium irradiation, when it is applied for a long enough period in hypertrophic gingivitis.

As L. Arey has shown, two different giant cells are found in epulis: giant cells with acidophilic cytoplasm, and pycnotic nuclei rich in chromatin; and giant cells with basophilic cytoplasm, with nuclei whose chromatin structure is distinct, a distinct membrane, and nucleolus. Transitional forms were not found.

In the connective tissue of epulis fibrosa, there is found an osteoid conversion, with a transformation into bone tissue; fibroblasts are enclosed in spaces and become bone cells, a direct change from connective tissue to bone. Osteoblasts in epithelial disposition,

as in normal bone, are never found. This heterotopic bone formation occurs in the central part of epulis.

—*M. B.*

298—Dodd, Katherine, Johnston, L. M. and Buddingh, G. J.: **Herpetic stomatitis.** *J. Pediatrics*, Jan., 1938. From Abstr. in *J. A. M. A.* **110**(14):1145. April 2, 1938.

Dodd and associates describe a form of stomatitis observed in 88 children between 1 and 3 years of age at Vanderbilt Hospital Children's Clinic during the past eleven years which seems to be a clinical entity. There are evidences of its being contagious. The stomatitis appeared to be identical with the ordinary aphthous type but along with it there is a sudden onset of fever, general malaise and loss of appetite; lesions appear either at onset or within 24 hours or later. Besides the reddish blisters on tongue, lip and buccal and sub-lingual mucous membrane there was marked swelling of gums with tendency to ready bleeding and increased salivation; irritability and pain on eating. Smears showed no predominating organism. Various systemic diseases accompanied the condition. The stomatitis appeared to be self-limiting, lasting from a few days to two weeks. Herpes developed in rabbits inoculated with swabbings from the mouth lesions. —*C. R.*

299—Fortier, J.: **Les gingivites de la grosseuse.** Gingivitis of pregnancy. *Rev. Belge de Stom.* **2**. 1938.

Gingivitis which appears frequently in the course of pregnancy and which varies from a simple redness, with a tendency for bleeding, to an hypertrophy which gives the appearance of epulis, is not due to deficient oral hygiene or vitamin deficiency; it is due to variations in the ovarian hormones, as proposed by Stout. Dr. Fortier has noticed, also, that analagous symptoms appear in young girls at the time of the menses.

—*M. B.*

300—Gankine, B. I.: **Cas d'acné en rapport avec une septicémie chronique d'origine dentaire.** A case of rosaceous acne in connection with a chronic septic condition of dental origin. *L'Odontologie.* **76**:147-51. 1938.

The connection between septic conditions of the mouth and pathological conditions of the skin, which has not received much attention, is here emphasized by a report of a case history. The patient, whose mouth was in extremely bad condition—with focuses of infection and gingival fistulas—came to the dermatology clinic with chronic dermatosis: rosaceous acne. He was sent to a dentist for complete prophylaxis. Within a short time his acne began to improve; and in one year the skin condition was completely cleared up.

The author states that in this case there were certainly vaso-allergic phenomena, with consequent sensitivization of the whole organism by the septic odontologic toxins; in this connection, he has the backing of several other authors. Study of morbid states of allergy shows that the allergy can be so minute that its presence is only determined by biologic procedure; yet it can be sufficient to give rise to troubles of the autonomic nervous system.

—*M. B.*

301—Giardino, G.: **Les variétés histologiques des épulides dans leur rapport histogénétique avec les proliferations inflammatoires de la paradentose.** Histological varieties of epulis in histogenetic connection with inflammatory proliferations of paradentosis. *Rev. Belge de Stom.* **4**. 1938. (Originally in *Revista Italiana di Stom.* **3-7**. 1938.)

Epulis can have its origin in the alveolodental ligament. To know the histogenetic process of this type of epulis better, one must, in the first place, study the phases of development of the peridental tissue, which can show in the course of its development many histological aspects which explain various tissues of epulis. In following the evolution of granuloma or cysts of the root, one can better establish the principle factor where proliferation of the peridental tissue begins to border on epulis.

The study of various structural forms of epulis shows that it has a relationship to inflammatory processes of the peridental tissue. On the other hand, histological analogy between epulis and fibrous osteitis confirms the reactive nature of the latter which, by its set of characteristics, could be considered as an intermediate between inflammatory formations and blastomatous formations.

—*M. B.*

302—Heinrich, E.: **Paradentose bei einen fünfjahrigen hunde.** Paradentosis in a five-year old dog. *Z. Rund.* **33**:1374. 1938.

The occurrence of caries in animals is known, but the author has but occasionally read of paradentosis in animals. He presents,

therefore, a case of his own, and feels it is generally interesting.

A five-year-old Scotch-Terrier, whose upper jaw in front shows full atrophy; the upper teeth were quite loose, and were therefore held in place with a brace. Moreover, there were no indications of gingival or bone disease, as the picture showed normal gum in the lower jaw. The dog had for several years refused hard food, especially bones.

—*M. B.*

303—Held, Dr.: **Paradentose à abrasion.** Paradentosis as compared with abrasion. *La Rév. Odontolog.* **4**:318. 1938. (Originally appeared in *Paradentium.* **1**. 1938.)

Clinical observation shows a great frequency of resorptions of the alveolar process (paradentosis) as compared with the relative rarity of dental abrasions. Among the general class of vertebrates, dental abrasion is a general phenomenon; but among humans, abrasion is a secondary and passive phenomenon. Continuous dental eruption is usually insignificant; but if it does exist, it is secondary to abrasion and is a compensation of nature to maintain a constant articulation height.

—*M. B.*

304—Kutzleb, H. J.: **Über schleimhautaffectionen der Schwangerschaft und deren Behandlung durch askorbinsäure** (Vit. C). Infection of the mucosa in pregnancy and its treatment with ascorbic acid (vit. C). *Z. Rund.* **17**:747. 1938. (Originally in *Munchner Mediz. Wchnschrift.* **13**. 1938.)

The studies of Kutzleb showed that in pregnant women without affected mucosa only a negligible vitamin C deficiency existed. These patients began, after only two to three days of treatment with Vitamin C to excrete ascorbic acid, while the patients with gingivitis of pregnancy and arrested vulvitis, ascorbic acid could be obtained in the urine only after 8-10 days of treatment. Gingivitis usually disappears a few days after ascorbic acid appears in the urine.

Conclusions:

1. Vitamin C deficiency of pregnant women with mucosal infection is greater than that of pregnant women without such condition.
2. Gingivitis during pregnancy is not limited to the disease of the mouth, but is a symptom of disorder in the whole organism which, during pregnancy, causes similar symptoms in the vulva.
3. Causes of the deficit of ascorbic acid mechanism should be investigated.

—*M. B.*

305—Lampert: **Die bedeutung der reaktionstypenlehre für die behandlung der paradentosis.** The meaning of a system of reaction-types in the treatment of paradentosis. *Schw. Monat. F. Zahnheilk.* **12**:1368. 1938. (Originally appeared in *Paradentium.* **10**:139. 1938.)

A constitutional classification on the basis of the speed of various reactions upon stimulation was thoroughly studied. Result: Two types not entirely pure, can be described. They react upon stimulation, medicament, nutrition, work performance, etc., entirely differently. This difference in behavior also manifests itself in paradentosis. On the basis of X-ray findings and external stimulation, such as overstrain, etc., the constitutional type can be ascertained. The prognosis and therapy must be made to conform with the type; the latter can then be begun with that consideration.

—*M. B.*

306—Larenas, C.: **L'équilibre chimique des ions minéraux dans les paradentoses.** Chemical equilibrium of mineral ions in paradentosis. *Schw. Mschr. f. Zahnheilk.* **7**:738. 1938.

The various ions play an important role in normal functioning of the organism, and have an effect on the physico-chemical properties of cells, on the neuro-vegetative system, on processes of calcification and decalcification, and other body activities.

A study of the equilibrium of mineral ions in the blood will be of great advantage in understanding the disturbances forming the syndrome of paradentosis.

—*M. B.*

307—Palazzi, S.: **Die paradentiumpathie aus haemopathischem ursprung.** Pathological condition of the paradentium of hemopathic origin. *Schw. Monat. f. Zahn.* **4**:361. 1939.

In hemopathic diseases of the paradentium, internal therapy alone is of primary value and local therapy of secondary value only. There are many possibilities for pathogenesis in various parts of the organism from a pathological blood condition; and in considering the constitutional weakness of the paradentium and its topographical position as a peripheral organ, it can be seen that pathological changes in the para-

dentium can easily occur in blood disease. Various forms of anemia and leukemia, severe inflammatory changes in bone marrow, and general disturbances of hematopoiesis, are some of the blood conditions that can cause diseases of the paradentium.

The author makes the point that it is important to differentiate between those pathological forms of the paradentium of acute character, such as are often seen in leukemia with acute termination, from those forms of chronic character. He then gives a full description of the syndrome of acute cases, from the histological, radiological, and clinical standpoint. On the basis of his experiences, he points out the absolute predominance of general pathogenetic factors in hemopathic conditions, and therefore the absolute importance of internal therapeutic factors; also, in the general course of hemopathic diseases of the paradentium, it is almost as fatal as the hemopathic condition itself.

—*M. B.*

308—Peyrus, J.: **Les stages inapparents de l'avitaminose C en pathologie bucco-dentaire.** The obscure stages of vitamin-C deficiency in bucco-dental pathology. *Rev. Odont.* **9-10**:658. 1938. (Originally in *Courrier Medical.* **47**. 1937.)

The author points out the unsuspected frequency of hypovitaminosis or avitaminosis of vitamin C, which can often be disclosed by oral examination. Congested gum, bleeding at the slightest touch, ulcerations on the inner surface of the lips are some of the symptoms. These lesions, like other deficiency conditions, respond very quickly to administration of 2 to 3 compresses of ascorbic acid. Besides, there are tests to detect vitamin-C deficiency by chemical titration (the method of Harris), or by reduction of dichlorphenol-indophenol. But noting these deficiencies should lead to detection of infantile scurvy, and to the suspicion of stomatitis or dystrophic dental lesions, and to the institution of appropriate vitamin treatment.

In such cases, the author uses "laroscorbine," a synthetic crystalline vitamin C, in an average dose of 2-3 compresses each day; with this method, he has corrected Vitamin C deficiency and pre-deficiency conditions, and attained a real caries prophylaxis.

—*M. B.*

309—Query. **Allergy of mouth to foods.** *J. A. M. A.* **110**(10):759. Mar. 5, 1938.

Woman of 18 has had a sore ulcerated hard palate on two recent occasions; both attacks were ushered in by hive-like condition of the face, swelling, itching and general unwell feeling. Face condition clears up in a couple of days and this clearing is followed by aggravation of sore mouth condition and ulcerations in roof of mouth. Condition is apparently an urticarial type of skin reaction accompanied by canker sores of the mouth and is likely due to a food allergy. Chocolate, wheat and milk are common foods often to blame. If it is not possible to have patient tested for food allergy, elimination diet should be tried, or careful observation and record of foods immediately preceding onset of attacks may reveal cause.

—*C. R.*

310—Query. **Recurrent stomatitis.** *J. A. M. A.* **111**(25):2325. Dec. 17, 1938.

Case is described of male 18 with stomatitis caused by yeast hyphae. Condition clears for a time then recurs in spite of treatment with bismuth preparations, arsphenamine and silver nitrate. Since local therapy has not been effective it is advised to look for underlying conditions. Yeast organisms possibly being saprophytic and existing because of decreased local resistance. Wasserman test is desirable and test of fasting gastric contents; any abnormality should be corrected. If these fail, cultures of dominant organism in stool should be used for cutaneous test "using these antigens as well as one prepared from the mouth culture." Desensitization to the organisms producing positive cutaneous reactions may result in a changed susceptibility and healing of lesions in the gastro-intestinal tract. Aqueous solutions of thymol 1-1000 or solution of H_2O_2, 1 to 4% may be effective.

—*C. R.*

311—Siegmund, Prof. Dr. H.: **Akute paradentitis bei anergischen allgemeinerkrankungen.** Acute paradentitis in general anergic illnesses. *Dtsch. Zahn. Mund. und Kieferheilk.* **10**. 1938.

Prof. Siegmund discusses the so-called "normal" gingivae and the relationship of bacteria found normally in the oral cavity to the condition of paradentosis. Under conditions which involve a change in the

normal relationship of such bacteria and the oral mucosa, every illness which tends toward a reduction of the defensive mechanism, the primary function of active mesenchyme, plays an important role in the functioning of the organism. The author puts particular emphasis on diseases which are evident through strong changes in the blood-forming organs, especially agranulocytosis, acute leukemia, and metallic poisoning. These go together with disturbances in the condition of bone marrow and changes in the defense mechanism of the organism against bacteria; in these disorders, the gingivae are often strongly involved and gingivitis frequently develops.

Dr. Siegmund cites cases of his own experience; he gives a complete description, with the aid of sections through the gums and teeth, of the changes involved in the case of a man of 28 years, who died of typical agranulocytosis with necrotic angina and focalized gangrene of the lung. The spread of inflammatory changes of the mucosa was only possible because of a fully prostrate defensive power of the paradental tissues; the unusual resorption present, the author links up with severe disturbances in bone metabolism, which is the local sign of primary disease; and in his opinion, the rapid destruction of the alveolus and loss of the teeth is only slightly different from other forms of progressiva paradentitis profunda. A stage of every case of gingivitis belongs in the category of chronic marginal paradentitis profunda. The author inclines toward the idea that a relative C-hypovitaminosis, possibly in connection with A-hypovitaminosis, is responsible for increase in gingival disorders.

The findings show an openly inflammatory change in the mucosa with intense hyperemia in the interdental papillae as well as in the front and back alveolar wall. The start of marginal inflammatory atrophy of the alveolus is the beginning of tooth loss from paradentosis, accomplished by the mechanical and inflammatory factors which are in action.

—*M. B.*

312—Strean, Lyon P., D. D. S.: **Pruritis gingivae.** *Can. Med. Assoc. J.* **38**:362-63. 1938.

Pruritis is a symptom of various disorders. The term designates itchiness in many different locations. The author was unable to find itchiness of the gingivae recorded in the literature. In this report he describes several cases in which this was a significant symptom and terms it "pruritis gingivae."

In four of the five cases described sugar was found in the urine and blood examination showed delayed sugar tolerance. This suggested diabetes, and the patients were prescribed a diabetic diet. Associated symptoms together with the itchiness in the gums disappeared and had not returned up to the time of making the reports of from five to seven months later.

The itching symptoms in the fifth case appeared only after using a certain tooth paste. Upon discontinuing the use of the tooth paste the symptoms failed to recur after one year.

"Pruritis gingivae though strongly suggestive of disturbed sugar metabolism must be differentiated from drug idiosyncrasy in the absence of infection in the oral tissues."

—*G. R. S.*

313—Tempestini, E.: **Paradentium-erkrankungen und diabetes.** Disorders of the paradentium and diabetes. *Z. Rundschau.* **18**:792. 1938. (Originally in *Annali di Clinica* Odontoiatrica. **3**. 1938.)

After a survey of the literature on the relationship between disorders of the paradentium and diabetes, and after mentioning the causes which come into consideration in both diseases, Dr. Tempestini reports his studies on blood sugar with an empty stomach and the curve of nutritive glycemia in thirty individuals without diabetes, who had disorders of the paradentium. In most cases, a high value of blood sugar on an empty stomach and a curve of nutritive glycemia were obtained; and it can be said that the height, duration, and end of the curve rise differ from nutritive curves of normal individuals. The author comes to the conclusion that with paradentotics, there is usually an hepatic sympathidotonus which occurs probably in connection with a hyperfunction of the thyroid, or of the posterior lobe of the hypophysis.

—*M. B.*

314—Traub, E. F. and Holmes, R. H.: **Dermatitis and stomatitis from mercury of amalgam fillings.** *Arch. Dermatology and Syphilology.* Sept., 1938. From Abstr. in *J. A. M. A.* **3**(15):1409. Oct. 8, 1938.

Traub and Holmes encountered two cases of dermatitis caused by mercury from amalgam fillings in one of which stomatitis was

also present. Reviewing the literature on the subject authors conclude that probability of chronic mercurial poisoning from silver or copper amalgam fillings is slight and to be expected only in case of hypersensitive subjects. Acute manifestations of dermatitis and stomatitis are probably more common than generally believed, the degree varying with different compounds and with individuals. Skin reacts more to external application of mercury than does mucous membrane.

315—Wannenmacher: **Die paradentitis marginalis progressiva bei jugendlichen individuen.** Paradentitis marginalis progressiva in young people. *Z. Rund.* **26**:1118. 1938. *(Svensk Tanlakare-Tadskrift.* **1**. 1938.)

On the basis of extensive studies (Breuer) it has been established that, between pronounced general disturbances and the particular paradentosis type, no legitimate connections are to be demonstrated. In spite of this, there is the possibility that an actual relationship does exist which has not yet been shown. Concerning paradentitis marginalis progressiva in the comparatively young the author states that:

1. Rarely or never is a general physical disturbance established which warrants the assumption of a relationship with paradentopathy.
2. It is important to recognize the easily clogged interdental space and the liability of the interdental papillae to infection. Also the quantitive and qualitative blood supply, and the related effect of local metabolism.
3. It is to be assumed that an organic disposition (lowered resistance) lies at the basis of it. It is interesting to note that the oldest paradental tissue is affected first.

—*M. B.*

ABSTRACTS AND EXTRACTS OF CURRENT DENTAL LITERATURE FOR 1938

(Will be concluded in the Jan., 1940 issue.)

THE Twenty-seventh Annual Meeting of the American Academy of Periodontology will be held in Cleveland, Ohio, September 5, 6 and 7, 1940. Members of the American Dental Association are urged to attend.

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BOOK REVIEWS

Dental Science and Dental Art. Edited by Samuel M. Gordon, Ph. D., National Research Council Fellow (Biological Sciences), 1926-1928; Director, American Dental Association Bureau of Chemistry, and Secretary of the Council on Dental Therapeutics, American Dental Association, 1928-1937. Contributors: B. P. Babkin, M. D., S. Sc.; Allan G. Brodie, M. S., D. D. S.; Theodore Cornbleet, M. D.; H. Trendley Dean, D. D. S.; William M. Gafafer, D. Sc.; Samuel M. Gordon, Ph. D.; Bernhard Gottlieb, M. D.; Thomas G. Hull, Ph. D.; Philip Jay, D. D. S.; Maxwell Karshan, Ph. D.; Harry Lyons, D. D. S.; Sanford M. Moose, D. D. S.; Balint Orban, M. D.; Floyd A. Peyton, D. Sc.; Theodor Rosebury, D. D. S.; Isaac Schour, Ph. D., D. D. S.; Maurice H. Seevers, Ph. D., M. D.; Maurice L. Tainter, M. D.; Edward B. Tuohy, M. D. Octavo, 731 pages, illustrated with 224 engravings. Lea and Febiger, Philadelphia, 1938.

Dr. Gordon's book was inspired by his acquaintance with dentists and with dentistry over a number of years when he was the able secretary of the Council on Dental Therapeutics of the American Dental Association.

It seemed to him that much scientific material of value to the profession was being overlooked or quite lost to them for want of proper and convenient compilation and presentation, and it was with the idea of supplying this need that the present volume was conceived and a distinguished group of scholars and professional men invited to coöperate in its production.

Dr. Gordon has given us a book of such wide scope that it would be practically impossible for any one person to review it intelligently in its entirety.

Dental Science and Dental Art is really a series of monographs arranged in 22 chapters and by almost as many authors. The authorities who discuss the various subjects were carefully chosen, but out of the 20 contributors only 10 are dentists, and this doubtless explains why certain parts are too detailed to make easy reading for the average dentist.

At the same time there can be no doubt that to an anaesthetist the chapters on Principles of Inhalation Anesthesia and Clinical Aspect of General Anesthesia by Edward B. Tuohy, M. D. and Maurice H. Seevers, Ph. D., M. D., will be most interesting. Likewise the professional statistician and perhaps the public health dentist will find William Gafafer's chapter on Statistical Methods in Dentistry to his liking.

And while we are in a critical mood may we say that the Editor has failed to give the prominence to the supporting structures of the teeth which the subject merits. Except for Gottlieb and Orban's chapter on the Biology of the Investing Structures of the Teeth, and Rosebury's and Lyons' monographs on Vincent's infection (and Doctor Cornbleet's very generalized chapter) there are only very occasional references to the periodontium. One such reference is that in Chapter II, page 92, in which Schour cites the recent experiments of Ziskin and his coworkers, using sex hormones on the gingivae of monkeys, and later on those of pregnant women.

> This investigation of the effects of hypergonadism on the adult teeth represents a thorough, carefully controlled coöperative series of experimental studies confirmed by clinical research, and offers a goal to be attained in the study of other dental problems.

The hard structures of the teeth, "propriodontal tissues," on the other hand have been most exhaustively treated; and the vast amount of research, histological, chemical, biological, physiological, bacteriological, pathological, and clinical, which is presented in its bearing on caries of the teeth, could well be a challenge to periodontia.

Drs. Maxwell Karshan, Ph. D., Theodor Rosebury, D. D. S., and Philip Jay, D. D. S., are responsible for the chapters on dental caries.

While there is sometimes trying detail in their presentation of the various aspects of

caries and occasionally the evidence seems contradictory, the material is well worth careful reading. Many pet theories are exploded, but many new ones suggested.

> We need, along with the critical skepticism that knows how to reject the false, a greater degree of receptivity that knows how to accept the true. (Rosebury, p. 269.)

The chapter by Gottlieb and Orban for the most part is not new to readers of the *Journal of Periodontology*, and the same may be said of Schour's work on Dental Histopathology and on Tooth Development, but of such good material as these chapters contain there can never be too much.

The etiology of Vincent's infection is discussed fully by Dr. Theodor Rosebury and if the bacterial phase is handled with almost bewildering detail this was doubtless necessary because of the complexity of the subject and the consequent confusion regarding it. One deduces at the end that in addition to the usually blamed spirochete and fusiform symbiosis, there is a special streptococcus and a vibrio apparently indispensable to the etiologic picture. The role of these last may be that of preparing the way for the fusiform-spirochetal complex by damaging tissue cells in advance of their invasion. Certain drug intoxications may also play a part in predisposing to the infection, as well as many other conditions of lowered resistance both local and systemic.

Dr. Lyons adds to other factors mentioned the likelihood of vitamin deficiency, allergies, dietary and drink indiscretions, and tobacco smoking. On this last he makes interesting comment.

> The chemical irritation incident to smoking tends to produce hyperkeratinization of the oral and gingival mucosae, with an accompanying loss of normal tissue tone. . . . . Probably the most important effect of smoking, as it relates to gingival infection, is its action on the local circulation. The products of tobacco burning, contained in tobacco smoke, have a marked vaso-constricting action on the blood vessels.

Dr. Lyons' medication is so conservative as to be almost revolutionary. Even in acute Vincent's infection,

> local application of drugs is of questionable value. Rationally the treatment of chronic Vincent's infection may be described as identical with that of other types of chronic periodontoclasia characterized by an infectious phase,

and his experience has proven the routine conservative procedures of periodontal therapy equally efficacious here.

A brief chapter also by Dr. Lyons, deals a bit too cursorily with the pulpless tooth problem; but there can be no doubt that with the application of the principles he advocates very many pulpless teeth may be safely retained.

Dr. Cornbleet's chapter on Selected Diseases of the Mouth is well worth reading and while, as the Editor suggests, a more complete account of diseases of the mouth can be found elsewhere, it is undoubtedly true that many if not most of us will read a summary, and an unusually comprehensive summary, more readily than a weightier amount of material. Cornbleet's original tables for differential diagnosis are admirably designed to direct attention to the more prominent features of any oral pathology which may present, and thus simplify and expedite the diagnosis.

The subject of local anesthetics as well as local anesthesia is most ably handled by Doctors Moose and Tainter of San Francisco. The relative merits of anesthetics of the general type of procaine are discussed fully and frankly. The technic of various injections is described and graphically illustrated.

Thomas Hull, Ph. D., has given a remarkably concise and well-summarized account of antiseptics and disinfectants in chapter 21. The reader will be impressed by the fact that there are a great many variable factors to be considered with regard to the use and value of disinfectants. Statistics presented by interested manufacturers may be very misleading.

A metallurgist, Floyd A. Peyton, D. Sc., writes ably of Restorative Materials in Dentistry.

Dr. Gordon's chapter on the relation to dental nutrition of calcium and phosphorus compounds presents briefly and simply a subject of great importance to all branches of dentistry.

H. Trendley Dean, D. D. S., of the United States Public Health service, has given comprehensive study to Endemic Dental Fluorosis and has presented his material skillfully.

Brodie has handled the Biologic Aspects of Orthodontia in a most instructive manner. The general principles of bone growth and its relation to function together with the mechanism of functional adjustment of the teeth are subjects which have a bearing

on many phases of dentistry and, not the least of these, on periodontia.

Babkin in his chapter on the Physiology of the Salivary Glands condenses into some 20 pages the results of a study embracing a bibliography of 187 works.

The chapter on Salivary Calculus is based on a previously published review by the same authors (Karshan and Rosebury) in *Annals of Dentistry* 3:37. 1936, "revised and amplified." Naesland's theory of the importance of certain filamentous microörganisms in the formation of calculus appears to the authors most consonant with all experimental data on the subject, but "further research may be expected to increase our knowledge materially."

The index will be found useful, and aside from the main content, the vast amount of bibliographical data with each chapter makes *Dental Science and Dental Art* an indispensable reference book.

Dr. Gordon is to be congratulated on his accomplishment.

—*Celia Rich*

▲ ▲ ▲

Periodontia. By Willman Warren Page, D. D. S., M. S. Assistant Professor of Operative Dentistry and formerly head of the Clinical Division of Periodontia Chicago College of Dental Surgery, School of Dentistry, Loyola University, Chicago. Pp. 315. 117 illustrations. Index. A volume in the series of National Dental Monographs, edited by C. N. Johnson, M. A., D. D. S., L. L. D. New York: National Medical Book Company, Ltd. 1938. Review copied from *J. A. D. A.* 25:1183. July, 1938.

The biologic approach to dental problems is one that seems to have a good deal of approval, but one, strangely enough, that few authors seem willing or able, to make use of in a thorough-going investigation of their subjects. Dr. Willman, in this textbook on periodontia, not only accepts this approach, but also uses it as the groundplan for the entire book. The result is that it is one of the very few books on the subject that does more than pretend to treat adequately the histology and pathology of the tissues involved. The chapters that deal with the normal structure and biology of the periodontium and with the pathology and dysfunction of the periodontium are admirable for their clarity of style and completeness of content.

In approaching his problem from the biologic angle, the author has not made the mistake of losing himself, and his readers, in a complexity of theories. This intensely practical book finds such eminently useful things as instrument selection, finger position and technic of instrumentation within its scope. In fact, this text will serve capably as a laboratory manual in the practice of periodontia for both student and practitioner.

After a discussion of the histology and pathology involved, the author sets forth the clinical manifestations of periodontal diseases. This chapter is given added distinction and value because there is careful differentiation between the problems presented by varying age groups, a factor that is too often casually dismissed. The chapter on the treatment of periodontal diseases is complete and practical. There is also no reluctance on the part of the author to speak out on treatments that have compiled meager or dubious records of success.

Other important phases of periodontal treatment are discussed. There is a chapter on the surgical elimination of the periodontal pocket and some attention is given to a careful review of the facts with regard to the use of electrocoagulation. The volume concludes with a discussion of Vincent's infection, prophylaxis and oral hygiene.

The reviewer cannot let this opportunity pass to say a few words about the excellent illustrations that are used to supplement the text. There are more than a hundred of them and each is a fine example of what the scientific photograph or illustration should be, but so often is not. A very competent job had been done by the publishers in getting so many illustrations into a text that is priced as low as this one.

Dr. Willman's style is refreshing. He does not hesitate to make his scientific facts more attractive and vivid by using graphic parallels or illustrations. His criticisms are pointed and his exposition is occasionally touched with wit. This readable, practical text sets a very high standard for the other books in the field. It is not too much to say that this text could well be imitated to advantage by authors who have something to say about the science and art of dentistry.

—*Harold Hillenbrand*

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